

CANADA

REPORT

OF THE

MINISTER OF PUBLIC WORKS

ON THE

WORKS UNDER HIS CONTROL

FOR THE FISCAL YEAR ENDED JUNE 30

1902

SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 36
SECTION 37, OF THE REVISED STATUTES OF CANADA

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OTTAWA

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EXCELLENT MAJESTY

1902

*To His Excellency the Right Honourable Sir Gilbert John Elliot, Earl of Minto,
G.C.M.G., &c., &c., &c., Governor General of Canada.*

MY LORD,

I have the honour to lay before your Excellency the Report of the Department of Public Works of Canada, for the fiscal year ended June 30, 1902.

I have the honour to be,

My Lord,

Your Excellency's most obedient servant,

JAMES SUTHERLAND,

Minister of Public Works.

OTTAWA, December 1, 1902.

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Woodstock, Ont., public building.....		7, 25	22				
Wreck Cove, N.S.....		12		57			
Y							
Yamaska River, dredging.....		16		156			
Yamaska, lock.....		16				6	
Yarmouth, N.S., dredging.....		12		130			
" public building.....		3, 22					
York Bridge, Ont.....		19		187			
York, reception to Duke and Duchess.....		21					
Yorkton, N.W.T., public buildings.....		8, 26					
Yukon River, Y.T.....		18					
Yukon, public buildings.....		9					
" telegraphs.....	5	20			10, 28		
" roads and trails.....		19		190			
" rivers, &c.....				118			

PART I

REPORT

OF THE

DEPUTY MINISTER OF PUBLIC WORKS

FOR THE YEAR ENDED JUNE 30

1902

REPORT
OF THE
DEPUTY MINISTER OF PUBLIC WORKS
FOR THE FISCAL YEAR 1901-1902

DEPARTMENT OF PUBLIC WORKS,

OTTAWA, December 4, 1902.

The Honourable JAMES SUTHERLAND,
Minister of Public Works,
Ottawa.

SIR,—I have the honour to submit to you the report of the Department of Public Works for the fiscal year ended on June 30, 1902.

Although the work of the department has increased materially, in the past year, the present annual report, which contains a complete record of the operations of the department, will be somewhat smaller than usual in view of the concurrent preparation of a report similar to one issued twenty years ago, in 1882, by my predecessor, Mr. G. F. Baillargé, who undertook to record the operations of the department since Confederation or over a period of 15 years. The result was a book of reference which is consulted with benefit and utility by the officials of the department, and by almost all who require correct statistics on the movement of Public Works in Canada during that period.

I have thought it advisable to follow in the footsteps of my predecessor and to prepare a record of the department's operations during the last twenty years, 1882-1902. I have however extended the field within which Mr. Baillargé encompassed his work, and I have considered it expedient, while the records are available, to include in my work, not only reports of the operations of the department but historical statements concerning the most important works as well as biographical notes of the various commissioners, ministers and chief officers who have been connected with the department since its inception.

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To the report I purpose to add several maps indicating the location of the most important works under our control and in the text of the work will be included numerous engravings of the principal buildings, docks, harbours, &c., under the control of the department.

The information contained in this report will, I hope, be complete and accurate, and I trust that it will be received and appreciated by the public as well as the similar work done by my predecessor.

The report of the present fiscal year contains the usual review of works executed by the department, commencing with the second part which contains the usual statements of the Chief Accountant; by his report you will see that the expenditure during the present fiscal year ending June 30, 1902, is :—

Harbour and river works.	\$2,277,767 62
Dredging and plant.	846,566 60
Slides and booms.	260,750 61
Bridges and roads.	400,125 90
Public Buildings.	2,040,388 71
Telegraphs.	629,211 17
Miscellaneous.	331,988 59
Total.	\$6,786,799 20

Besides the above expenditure there was advanced to the Montreal Harbour Commissioners, through this department, the sum of \$550,000 or a grand total expended of \$7,336,799.20.

During the same period the revenue was, from :—

Slides and booms.	\$ 57,335 95
Docks and locks.	37,894 63
Telegraphs.	114,236 87
Miscellaneous.	20,702 11
	\$230,169 56

which does not include the further sums collected for this department by the Department of Inland Revenue.

Part six gives details of the revenue collected, comparative tables, &c.

HARBOUR AND RIVER WORKS.

The harbour works have been managed in the usual efficient manner; our dredging operations have been of incalculable benefit, and have been very satisfactorily executed; some improvement might be made in the plants in Manitoba and British Columbia; the lower provinces might also receive some accession to the fleet to keep pace with the growing demands of trade.

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PUBLIC BUILDINGS.

Part three of this report deals with the works executed by the chief architect ; buildings are kept in a satisfactory condition and where possible or advisable are improved to give greater protection and better service to the public.

TELEGRAPHS.

Nothing of importance has occurred in this branch, excepting the re-organization of the Yukon service, the laying of new cables in the Gulf service and the betterment of the Belle Isle system.

GENERALLY.

It is my pleasing duty to state that the officers of the department have attended to the business of the department, entrusted to them, with the usual energy and conscientiousness, for which I thank them and take this opportunity of assuring them that I fully appreciate their zeal and ability.

A. Gobeil,

Deputy Minister.

PART II.

STATEMENTS OF EXPENDITURE

DURING

FISCAL YEAR ENDED JUNE 30, 1902

PART II.

STATEMENT A.—Showing the Amounts Expended by the Department of Public Works of Canada during the fiscal year ending June 30, 1902.

Name of Work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.				
Amherst post office		190 70		190 70
Annapolis post office		37 72		37 72
Antigonish post office		48 66		48 66
Arichat post office	2,999 65	21 16		3,020 81
Baddeck armoury	3,947 62			3,947 62
" post office		116 86		116 86
Dartmouth post office		290 30		290 30
Digby, post office, &c.	15,804 87			15,804 87
Guysboro', post office, &c.	4,795 24			4,795 24
Halifax, Asst. Receiver General's office		5 75		5 75
" custom house	8,946 90			8,946 90
" drill hall	6,891 35	7 00		6,898 35
" examining warehouse		74 45		74 45
" hospital—marine		17 00		17 00
" immigration building		398 71		398 71
" post office, &c.		1,131 66		1,131 66
" power			447 75	447 75
" quarantine station (Lawlor's Island)	8,275 54			8,275 54
Kentville, post office, &c.		659 55		659 55
Liverpool post office	517 54	635 99		1,153 53
Lunenburg post office		44 50		44 50
Middleton armoury	91 58			91 58
Nappan experimental farm	615 72	139 17		754 89
New Glasgow, post office, &c.		363 45		363 45
North Sydney, post office, &c.		1,233 04		1,233 04
Pictou custom house		114 42		114 42
" post office		74 34		74 34
Springhill, post office, &c.	18,976 32			18,976 32
Sydney, post office, &c.	1,024 48	68 85		1,093 33
" quarantine station	1,822 29			1,822 29
Truro post office		570 02		570 02
Windsor armoury		6 00		6 00
" post office, &c.		224 30		224 30
Yarmouth post office		272 98		272 98
Heating, lighting, water, &c., for all buildings in Nova Scotia. (For details see page 22)			25,798 59	25,798 59
Totals, Nova Scotia	74,709 10	6,746 58	26,246 34	107,702 02
Prince Edward Island.				
Charlottetown Dominion building		1,009 30		1,009 30
Kensington post office		1 00		1 00
Montague, post office, &c.		17 75		17 75
Stanley Bridge post office		0 75		0 75
Summerside post office		941 08		941 08
Heating, lighting, water, &c., for all buildings in Prince Edward Island. (For details see page 22)			5,625 95	5,625 95
Totals, Prince Edward Island		1,969 88	5,625 95	7,595 83

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PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total.
	\$ cts	\$ cts.	\$ cts.	\$ cts.
PUBLIC BUILDINGS.				
<i>New Brunswick.</i>				
Bathurst, post office, &c.....		947 02		947 02
Carleton (St. John) post office.....		535 19		535 19
Chatham post office, &c.....		910 08		910 08
" quarantine station.....		20 20		20 20
Dalhousie post office.....		332 35		332 35
Fredericton post office.....		1,563 01		1,563 01
Marysville post office.....	2,382 85			2,382 85
Moncton post office.....		627 85		627 85
Newcastle post office.....		1,151 64		1,151 64
Portland (St. John) post office.....		128 93		128 93
Richibucto post office.....	915 50			915 50
St. John, custom house.....		4,229 40		4,229 40
" generally.....			133 03	133 03
" immigration building.....	23,001 06			23,001 06
" observatory.....		95 12		95 12
" post office.....		2,403 99		2,403 99
" quarantine station.....	8,559 35			8,559 35
" savings bank.....		201 65		201 65
St. Stephen post office.....		807 29		807 29
Sussex armoury.....	5,991 95			5,991 95
" post office.....		59 55		59 55
Tracadie lazaretto.....		1,947 69		1,947 69
Woodstock armoury.....	1,462 62			1,462 62
" post office.....	2,397 57	44 23		2,441 80
Heating, lighting, water, &c., for all buildings in New Brunswick. (For details see page 22).....			23,003 90	23,003 90
Totals, New Brunswick.....	44,710 90	16,005 19	23,136 93	83,853 02
<i>Maritime Provinces.</i>				
Generally.....			228 73	
<i>Quebec.</i>				
Aylmer, post office, &c.....		121 46		121 46
Berthierville post office.....		30 87		30 87
Buckingham post office.....	7,072 00			7,072 00
Coaticook post office.....		134 72		134 72
Drummondville post office.....	10,655 78			10,655 78
Farnham post office.....		138 82		138 82
Fraserville post office.....		25 39		25 39
Granby post office.....	11,721 14			11,721 14
Grosse Isle quarantine station.....	32,459 65			32,459 65
Hochelaga post office.....	26,997 45			26,997 45
Hull, post office, &c.....	11,007 16	158 05		11,165 21
Joliette, post office, &c.....		334 85		334 85
Lachine, post office, &c.....		684 58		684 58
Laprairie, post office, &c.....		54 95		54 95
L'Assomption post office.....	1,192 60			1,192 60
Lévis cattle quarantine station.....		5,726 87		5,726 87
Montmagny, post office, &c.....		100 10		100 10
Montreal, custom house.....		7,777 32		7,777 32
" drill hall.....		11 00		11 00
" examining warehouse.....		10,568 52		10,568 52
" generally.....			381 00	381 00
" immigration office.....		5 78		5 78
" inland revenue.....	550 00	195 94		745 94
" post office.....		10,249 61		10,249 61
" power for elevators, &c.....			2,817 03	2,817 03
" Public Works offices.....		154 80		154 80
Peribonka immigration building.....	1,005 07			1,005 07
Carried forward.....	102,660 85	36,473 63	3,198 03	142,332 51

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PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS—Continued.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.	102,660 85	36,473 63	3,198 03	142,332 51
Quebec—Continued.				
Quebec artillery workshops.....	16,518 05	.....	.....	16,518 05
" cartridge factory.....	15,803 46	.....	.....	15,803 46
" citadel buildings.....	.....	4,506 94	.....	4,506 94
" clerk of works office.....	.....	73 50	.....	73 50
" cullers office.....	.....	2 62	.....	2 62
" customs house.....	.....	1,294 26	.....	1,294 26
" exam. warehouse.....	.....	843 05	.....	843 05
" immigration buildings.....	1,952 35	8,746 61	.....	10,698 96
" inland revenue.....	.....	0 50	.....	0 50
" iron foundry.....	1,364 02	.....	.....	1,364 02
" post office.....	.....	3,752 63	.....	3,752 63
" power.. ..	.....	.....	100 00	100 00
" Queen's wharf building.....	.....	1,981 26	.....	1,981 26
" weights and measures office.....	.....	124 76	.....	124 76
Richmond, post office, &c.....	.....	522 38	.....	522 38
Rimouski post office.....	.....	8 55	.....	8 55
Roberval immigration building.....	2,630 35	.....	.....	2,630 35
Sherbrooke, post office, &c.....	934 78	1,234 07	.....	2,168 85
Sorel, post office, &c.....	.....	332 46	.....	332 46
St. Henri, post office, &c.....	.....	276 85	.....	276 85
St. Hyacinthe, post office, &c.....	.....	1,512 69	.....	1,512 69
St. Jerome, post office, &c.....	.....	1,965 72	.....	1,965 72
St. John's, post office, &c.....	.....	59 80	.....	59 80
St. Roch, post office, &c.....	.....	3 77	.....	3 77
Three Rivers custom house.....	.....	778 46	.....	778 46
" post office.....	.....	375 35	.....	375 35
Victoriaville, post office, &c.....	3,932 86	9 90	.....	3,942 76
Quebec, generally....	.....	.....	1,009 60	1,009 60
Heating, lighting, water, &c., for all buildings in Quebec. (For details see page 23).....	.....	.....	65,199 31	65,199 31
Totals, Quebec.....	145,796 72	64,879 76	69,506 94	280,183 42
Ontario.				
Alexandria reformatory.....	174 02	.....	.....	174 02
Almonte, post office, &c.....	.....	84 17	.....	84 17
Amherstburg, post office, &c.....	.....	100 02	.....	100 02
Arnprior post office.....	.....	601 76	.....	601 76
Barrie post office.....	.....	68 75	.....	68 75
Belleville post office.....	.....	2,284 51	.....	2,284 51
Berlin post office.....	.....	201 67	.....	201 67
Brampton post office.....	.....	79 88	.....	79 88
Brantford post office.....	.....	347 05	.....	347 05
Brockville drill hall.....	34,293 85	.....	.....	34,293 85
" post office.....	.....	613 89	.....	613 89
Carleton Place post office.....	.....	36 80	.....	36 80
Cayuga post office.....	.....	68 28	.....	68 28
Chatham post office.....	.....	791 19	.....	791 19
Clifton post office.....	.....	1,626 12	.....	1,626 12
Clinton post office.....	2,812 77	.....	.....	2,812 77
Cobourg post office.....	.....	93 25	.....	93 25
Collingwood post office.....	.....	16 50	.....	16 50
Cornwall post office.....	.....	433 78	.....	433 78
Deseronto post office.....	18,095 41	.....	.....	18,095 41
Dundas armoury.....	7,091 05	.....	.....	7,091 05
Fort William post office.....	96 59	.....	.....	96 59
Galt post office.....	.....	324 93	.....	324 93
Gananoque post office.....	.....	148 98	.....	148 98
Goderich post office.....	134 62	134 62
Carried forward.....	62,563 69	8,056 15	70,619 84

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PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
PUBLIC BUILDINGS—Continued.				
Brought forward.....	62,563 69	8,056 15		70,619 84
Ontario—Continued.				
Guelph post office.....		116 51		116 51
Hamilton drill hall.....		6 30		6 30
" post office, &c.....		3,295 55		3,295 55
Ingersoll, post office, &c.....	2,415 93	14 05		2,429 98
Kingston custom house.....		360 78		360 78
" drill hall and armoury.....	1,217 37	603 01		1,820 38
" inland revenue.....		50 00		50 00
" military college, &c.....	18,982 78	34 85		19,017 63
" post office.....		1,119 61		1,119 61
Lindsay post office.....		4 85		4 85
London custom house.....		2,195 78		2,195 78
" drill hall and armoury.....	14,069 01			14,069 01
" post office.....		6,056 60		6,056 60
Napanee post office.....		120 27		120 27
Orangeville post office.....		4 05		4 05
Orillia post office.....		483 67		483 67
Ottawa parliamentary and deptl. buildings:				
Astronomical observatory.....	629 76			629 76
Bacteriological laboratory.....	4,405 01			4,405 01
Experimental farm.....	5,265 50	1,250 26		6,515 76
Langevin block, boilers.....	1,392 76			1,392 76
Major's Hill Park.....	16,325 42		3,589 68	19,915 10
Military store building.....	33,480 98			33,480 98
National Art Gallery.....	700 00		1,169 91	1,869 91
Parliament buildings.....	66,540 84			66,540 84
Post office, &c.....	1,681 93			1,681 93
Rideau Hall.....	4,833 42	19,091 23		23,924 65
" grounds, \$5,259.56; snow, \$825; fuel and light, \$8,000; watchman, \$547.50			14,632 06	14,632 06
Royal Mint.....	791 51			791 51
Surveyor general's new offices.....	15,496 95			15,496 95
Victoria Memorial Museum.....	423 28			423 28
Generally: removal of snow.....			1,773 92	1,773 92
" repairs and furniture.....		131,841 40		131,841 40
" shelving, file cases, &c.....	25,000 00			25,000 00
" grounds.....			7,035 50	7,035 50
" power for elevators, &c.....			936 05	936 05
" telephone service.....			6,999 69	6,999 69
Paris post office.....	17,729 30			17,729 30
Pembroke post office.....		134 24		134 24
Perth post office.....		24 00		24 00
Peterboro' custom house.....		645 70		645 70
" post office.....		54 50		54 50
Petrolea post office.....		152 81		152 81
Pictou post office.....	8,601 43	12 85		8,614 28
Port Arthur post office.....		126 80		126 80
Port Colborne post office.....		49 54		49 54
Port Hope post office.....		58 95		58 95
Prescott, post office, &c.....		2,163 10		2,163 10
Rat Portage post office.....		37 15		37 15
Sarnia post office.....	25,224 72			25,224 72
Sault Ste. Marie post office.....	8,395 45			8,395 45
Smith's Falls post office.....		164 14		164 14
Stratford post office.....		110 98		110 98
Strathroy post office.....		2,919 42		2,919 42
St. Catharines post office.....		989 32		989 32
St. Thomas drill hall and armoury.....	30,957 50			30,957 50
" post office, &c.....		124 40		124 40
Toronto custom house.....	5,043 99	287 85		5,331 84
" drill hall and armoury.....	14 14			14 14
Carried forward.....	372,182 67	182,760 67	36,136 81	591,080 15

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PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
PUBLIC BUILDINGS—<i>Continued.</i>				
Brought forward.....	372,182 67	182,760 67	36,136 81	591,080 15
<i>Ontario—Concluded.</i>				
Toronto engineer's office		181 40		181 40
" exam. warehouse.....	1,384 19	78 50		1,462 69
" generally			1,030 00	1,030 00
" inland revenue.	260 48	87 05		347 53
" Junction building.....	4,531 60			4,531 60
" postal station " C "	13,025 95			13,025 95
" post office, &c.....	8,156 75	484 35		8,641 10
" power.....			243 98	243 98
" Union station.....	292 03	322 73		614 76
Trenton post office.....		107 08		107 08
Walkerton post office.....		47 00		47 00
Windsor drill hall.....	45,064 48			45,064 48
" post office		5,424 52		5,424 52
Woodstock post office.....	17,701 72			17,701 72
Ontario generally ...			67 90	67 90
Heating, lighting, water, &c., for all buildings in Ontario. (For details see page 25).			209,069 18	209,069 18
Totals, Ontario.....	462,599 87	189,493 30	246,547 87	898,641 04
<i>Manitoba.</i>				
Brandon Dominion lands office		100 50		100 50
" experimental farm	315 13	100 06		415 19
" immigration building		380 20		380 20
" post office, &c.		1,953 41		1,953 41
Dauphin Dominion lands, &c.....		119 10		119 10
Minnedosa Dominion lands office.....		5 50		5 50
" immigration building		12 69		12 69
Portage la Prairie post office		227 05		227 05
Selkirk (East) immigration building		404 15		404 15
Winnipeg clerk of works office.....		178 85		178 85
" custom house.....		202 90		202 90
" Dominion lands office.....		142 05		142 05
" examining warehouse		98 60		98 60
" immigration buildings.....		1,703 47		1,703 47
" post office.....	144 09	4,213 91		4,358 00
" power.....			185 97	185 97
Manitoba, generally			234 97	234 97
Heating, lighting, water, &c., for all buildings in Manitoba. (For details see page 25).....			17,222 34	17,222 34
Totals, Manitoba.....	459 22	9,842 44	17,643 28	27,944 94
<i>North-west Territories.</i>				
Battleford registry office.. ..		362 50		362 50
Calgary court house, &c.		968 89		968 89
" custom house.....		62 00		62 00
" immigration building		494 25		494 25
" land and registry office.....		491 20		491 20
" post office.....		336 80		336 80
Carnduff court house.....	3,684 92			3,684 92
Edmonton Dominion lands office ..		125 60		125 60
" court house, &c.....	5,952 00			5,952 00
" immigration building.....		45 00		45 00
" post office.....		54 50		54 50
Indian Head experimental farm	231 02	100 98		332 00
Carried forward.. . . .	9,867 94	3,041 72		12,909 66

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PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
PUBLIC BUILDINGS—<i>Continued.</i>				
Brought forward.	9,867 94	3,041 72	....	12,909 66
<i>North-west Territories.—Concluded.</i>				
Lacombe immigration building.....		15 00		15 00
Lethbridge Dominion lands office.....		69 00		69 00
" immigration building.....	4,056 14			4,056 14
" post office, &c.....		30 75		30 75
Macleod court house, &c.....		17 75		17 75
" custom house.....		570 40		570 40
Medicine Hat court house.....		353 25		353 25
Moose Jaw court house.....		21 87		21 87
Moosomin court house.....		108 20		108 20
Prince Albert court house.....		30 50		30 50
" immigration building.....		120 00		120 00
" land and registry office.....		61 66		61 66
Qu'Appelle immigration building.....		25 00		25 00
Red Deer Valley immigration building.....	82 14			82 14
Regina clerk of works office.....		5 00		5 00
" court house, &c.....		1,514 07		1,514 07
" Dominion lands office.....		113 00		113 00
" government buildings.....		3 25		3 25
" lieut. governor's residence.....	7,079 87			7,079 87
" post office.....		124 97		124 97
" registry office.....		11 00		11 00
Saskatoon immigration building.....	1,488 85			1,488 85
Strathcona immigration building.....	1,505 67	29 50		1,535 17
Wolseley court house.....		105 35		105 35
Yorkton court house.....	109 01			109 01
" Dominion lands office.....		36 15		36 15
" immigration office.....		13 10		13 10
North-west Territories, generally.....			563 55	563 55
Heating, lighting, water, &c., for all buildings in North-west Territories. (For details see page 25). ..			13,642 21	13,642 21
Totals, North-west Territories.....	24,189 62	6,420 49	14,205 76	44,815 87
<i>British Columbia.</i>				
Agassiz experimental farm.....	1,979 89			1,979 89
Atlin post office.....		243 14		243 14
Fernie inland revenue.....		25 00		25 00
Kamloops armoury.....	71 92			71 92
" Dominion lands office.....		54 90		54 90
" post office.....	13,614 80			13,614 80
Kaslo armoury.....	2,474 15			2,474 15
Nanaimo post office.....		1,719 70		1,719 70
Nelson armoury.....	1,858 88			1,858 88
" post office.....	26,795 15			26,795 15
New Westminster custom house, &c.....		3 60		3 60
" engineer's office.....		56 10		56 10
" examining warehouse.....	1,474 00			1,474 00
" post office.....	24,568 33	78 40		24,646 73
Revelstoke armoury.....	2,858 93			2,858 93
Roseland post office.....	29,856 56			29,856 56
Vancouver custom house.....		130 90		130 90
" drill hall.....	35,491 93			35,491 93
" post office.....	663 02	2,458 25		3,121 27
Victoria clerk of work's office.....		51 00		51 00
" drill hall.....		16 00		16 00
" Indian office.....		22 00		22 00
" post office, &c.....		2,906 43		2,906 43
" power.....			264 32	264 32
Carried forward.....	141,707 56	7,765 42	264 32	149,737 30

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PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Construc- tion and Improve- ments.	Repairs and Furniture.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS—Concluded.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward	141,707 56	7,765 42	264 32	149,737 30
British Columbia—Concluded.				
Williams' Head quarantine station	31,406 13	66 00	360 00	31,832 13
British Columbia generally			783 21	783 21
Heating, lighting, water, &c., for all buildings in British Columbia (for details see page 26).....			15,136 75	15,136 75
Totals, British Columbia.....	173,113 69	7,831 42	16,544 28	197,489 39
Yukon District.				
Yukon public buildings.....	244,051 07			244,051 07
Heating, lighting, &c., for Yukon buildings.....			127,801 75	127,801 75
Totals, Yukon District	244,051 07		127,801 75	371,852 82
Public Buildings Generally.				
Printing, stationery, instruments, travelling, &c.....			7,237 92	7,237 92
Salaries of clerks of works, assistants, &c.....			12,843 71	12,843 71
			20,081 63	20,081 63

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PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
HARBOURS AND RIVERS.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.					
Abbot's Harbour beach protection		1,125 76			1,125 76
Argyle Sound wharf		519 67			519 67
Barrington Head.....			45 82		45 82
Bass River wharf		1,099 11			1,099 11
Bear Point..			143 84		143 84
Bear River, removal of obstruction			3,000 00		3,000 00
Beaver Harbour wharf.....		704 39			704 39
Beaver River.....		2,097 46			2,097 46
Big Bras d'Or			370 47		370 47
Black Rock			249 98		249 98
Blanche breakwater..		475 60			475 60
Boularderie Centre wharf.....		3,028 55			3,028 55
Brooklyn.....		649 38			649 38
Burlington		3,499 99			3,499 99
Canada Creek breakwater		1,205 91			1,205 91
Cape Auget boat harbour.....		495 67			495 67
Cape Cove		3,999 97			3,999 97
Cape Negro Island.....		228 24			228 24
Cariboo Islands breakwater.		256 25			256 25
Chebogue, protection works.....		1,311 79			1,311 79
Cheticamp (Inverness Co.).....	9,655 22				9,655 22
Cheverie.....		768 23			768 23
Chipman's Brook breakwater		1,422 47			1,422 47
Clark's Harbour.....		6,685 93			6,685 93
Clementsport, removing obstruction		1,000 00			1,000 00
Coffins Island.		992 98			992 98
Comeau breakwater		997 31			997 31
Comeau's Hill.....		1,494 99			1,494 99
Comeauville.....			2,000 00		2,000 00
Cribbin's Point	754 45		2,368 54		3,122 99
Delap's Cove, repairs to pier.....			400 00		400 00
Digby	5,209 24	3,300 00			8,509 24
Eagle Head breakwater.....		1,068 95			1,068 95
East Bay			99 34		99 34
East Chezzetcook			149 50		149 50
East Jordan breakwater			400 01		400 01
Ecum Secum wharf		4,098 50			4,098 50
Englishtown			100 00		100 00
Eskasoni			9 60		9 60
Faulkner's Creek wharf		1,359 29			1,359 29
Friar's Head boat harbour.....		1,097 81			1,097 81
Gabarus breakwater		8,259 50			8,259 50
Georgeville			699 47		699 47
Grand Etang		2,799 35			2,799 35
Grand Narrows			1,711 50		1,711 50
Granville Ferry		999 28			999 28
Granville Centre wharf		1,101 02			1,101 02
Halifax Graving Dock				10,000 00	10,000 00
Hantsport			200 09		200 09
Harrigan's Cove wharf.....		1,461 71			1,461 71
Hawk Point Inlet, boat channel		484 29			484 29
Herring Cove breakwater..		168 95			168 95
Ingonish (North Bay)		951 36			951 36
Iona wharf.....		5,499 61			5,499 61
Isaac's Harbour wharf.....		1,539 50			1,539 50
Jones' Harbour		99 97			99 97
Kempt Head wharf.....		5,174 03			5,174 03
Kingsport, reconstruction of pier		9,278 70			9,278 70
L'Ardoise breakwater		231 30			231 30
Lennox Passage, dredging Carey's pas- sage		807 04			807 04
Carried forward....	15,618 91	83,839 81	11,948 16	10,000 00	121,406 88

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PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
HARBOURS AND RIVERS— <i>Con.</i>					
Brought forward.....	15,618 91	83,839 81	11,948 16	10,000 00	121,406 88
<i>Nova Scotia—Con.</i>					
Lingan, beach protection.....		1,999 80			1,999 80
Little Bras d'Or wharf		3,872 78			3,872 78
Little Narrows, boat harbour at Big Pond		996 78			996 78
" repairs to wharf.....			1,494 80		1,494 80
Liverpool.....	4,271 65				4,271 65
Livingstone's Cove wharf		3,997 50			3,997 50
Lockeport breakwater.....		299 64			299 64
Louisbourg	5,504 02				5,504 02
Lower Cove.....		2,440 49			2,440 49
McNair's Cove			1,198 17		1,198 17
Mabou Harbour.....			1,499 87		1,499 87
Malignant Cove		2,464 85			2,464 85
Margaree Harbour.....		3,065 57			3,065 57
Margaree Island		1,399 13			1,399 13
Margaretville pier		1,560 50			1,560 50
" breakwater			777 21		777 21
" completing eastern break- water.....		500 00			500 00
Merigomish			89 83		89 83
Meteghan Cove breakwater		3,199 93			3,199 93
" River.....		3,999 99			3,999 99
Minudie wharf.....		1,724 43			1,724 43
Morden breakwater.....			1,495 08		1,495 08
Musquodoboit wharf.....		1,364 04			1,364 04
Neil's Harbour breakwater.....		114 71			114 71
Newellton		399 59			399 59
New Harbour breakwater.....		3,693 04			3,693 04
North Sydney.....	2,132 06				2,132 06
North Wallace.....			537 53		537 53
Nyanza		890 29			890 29
Ogden's Pond		1,299 49			1,299 49
Parker's Cove		119 00	73 50		192 50
Parrsboro', beach protection.....		1,510 67			1,510 67
" wharf.....		5,723 80			5,723 80
Partridge Island			599 85		599 85
Pereaux		662 49			662 49
Pictou Light, beach protection		608 28			608 28
Pictou Islands			609 60		609 60
Pinckney's Point		998 73			998 73
Plymouth wharf extension.....		488 21			488 21
Porter's Lake.....		5,987 24	40 00		6,027 24
Port George breakwater.....		3,743 92			3,743 92
Port Hawkesbury.....		35 54			35 54
Port Hilford		2,724 05			2,724 05
Port Hood			1,237 36		1,237 36
Port Joli			497 08		497 08
Port Maitland (Yarmouth)			299 44		299 44
Port Medway.....			370 61		370 61
Port Mouton.....			363 93		363 93
Portuguese Cove.....			199 88		199 88
Red Islands.....			329 92		329 92
River Hebert.....			379 50		379 50
River John.....		525 81			525 81
Round Bay			496 74		496 74
Salmon River (Digby Co)			91 66		91 66
Sandford breakwater.....		2,542 18			2,542 18
Saulnierville.....		719 97			719 97
Scott's Bay.....			2,026 71		2,026 71
Carried forward	27,526 64	149,512 25	26,656 43	10,000 00	213,695 32

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PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construction and Improve-ments.	Repairs.	Staff and Main-tenance.	Total.
HARBOURS AND RIVERS—Con.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	27,526 64	149,512 25	26,656 43	10,000 00	213,695 32
Nova Scotia—Con.					
Sight Point, Boat harbour.....		499 76			499 76
Smithville.....		853 75			853 75
Sonora (Guysboro Co.).....	2,716 99				2,716 99
Sugar Loaf.....			34 00		34 00
Swims Point.....			184 62		184 62
Sydney.....	3,135 34				3,135 34
Tancook Island.....			936 48		936 48
The Gate, improvement to channel.....		1,000 00			1,000 00
Three Fathom Harbour.....		1,189 91			1,189 91
Tracadie East, beach protection.....		996 32			996 32
Wallace.....			193 25		193 25
Washabuck Centre wharf.....		106 03			106 03
Western Head.....			22 05		22 05
Whitehaven.....			999 67		999 67
Whitewater.....			249 95		249 95
Windsor.....		2,300 03	425 90		2,725 93
Wreck Cove.....			300 91		300 91
Yarmouth.....	5,989 13				5,989 13
Generally Nova Scotia.....				3,337 40	3,337 40
Totals Nova Scotia.....	39,368 10	156,458 05	30,003 26	13,337 40	239,166 81
Prince Edward Island.					
Annandale Pier.....		755 77	270 50		1,026 27
Belfast Pier.....			1,120 69		1,120 69
Blooming Point.....			48 01		48 01
Brae Harbour.....			5 00		5 00
Campbell's Cove.....		1,499 60			1,499 60
Canoe Cove.....		5,087 43			5,087 43
China Point Pier.....		306 56			306 56
Georgetown Pier.....		1,499 95			1,499 95
Graham's Pond.....			99 80		99 80
Haggerties Wharf.....			900 21		900 21
Hurd's Point.....	2,411 48		269 11		2,680 59
Kier's Shore.....		483 09			483 09
Miminigash breakwater.....		1,500 00			1,500 00
Morrison's Point.....		492 25			492 25
Murray River.....	9,651 50				9,651 50
New London.....			5,760 51		5,760 51
Nine Mile Creek.....			354 69		354 69
North Cardigan Pier.....		1,941 30			1,941 30
Pinette Pier.....			249 97		249 97
Port Selkirk.....		588 37			588 37
Pownal Pier.....		821 02			821 02
Rustico (south) pier.....			1,499 97		1,499 97
Skinner's Pond.....			30 00		30 00
Souris, Knights Point.....		5,180 00			5,180 00
Sturgeon Pier.....			523 06		523 06
Summerside Harbour.....	1,283 56	3,398 00			4,681 56
Tignish.....		1,937 42			1,937 42
Vernon River.....			149 95		149 95
Victoria (Crapaud).....	2,838 91				2,838 91
West Point Pier.....		3,542 50			3,542 50
Wood Island, south breakwater.....		4,145 00			4,145 00
Wood Island, northern breakwater.....			1,020 80		1,020 80
Harbours Generally, (P.E.I.).....				872 18	872 18
Totals, P. E. Island.....	16,185 45	33,178 26	12,302 27	872 18	62,538 16

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PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
HARBOURS AND RIVERS.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
New Brunswick.					
Anderson's Hollow.....			224 96		224 96
Back Bay.....		7,459 46			7,459 46
Bathurst wharf.....		1,996 02			1,996 02
Bay du Vin wharf.....		4,564 26			4,564 26
Black Brook.....		4,714 00			4,714 00
Burnt Church.....		5,051 00			5,051 00
Campbellton wharf.....		2,251 82			2,251 82
Campobello (Wilson's Beach).....			8,243 86		8,243 86
Cape Tormentine.....			22,600 32		22,600 32
Caraquet wharf.....		419 39			419 39
Chance Harbour.....		32 60			32 60
Chatham Custom House wharf.....		1,112 07			1,112 07
Chockfish River.....		931 39			931 39
Clifton (Stonehaven).....		2,991 28			2,991 28
Dalhousie.....			999 50		999 50
Dipper Harbour.....		66 80			66 80
Dorchester (Cole's Point).....		4,405 99			4,405 99
Douglas Booms (York Co.).....	1,519 37				1,519 37
Fredericton.....	2,111 89				2,111 89
French Lake, (Sunbury Co.).....	131 30				131 30
Grande Anse.....		5,740 85			5,740 85
Hopewell Cape-wharf (new).....		5,002 50			5,002 50
Kingston (now Rexton).....			705 44		705 44
Lord's Cove—Deer Island.....		1,000 00			1,000 00
Millidgeville, (R. K. Y. Club wharf).....	606 84				606 84
Mispec—Repairs to wharf.....			1,969 46		1,969 46
Mispec Harbour, breakwater.....		10,996 00			10,996 00
Murray & Gregory's, (St. John Co.).....	240 76				240 76
Ox Island (Sunbury Co.).....	4,735 19				4,735 19
Point Wolfe, breakwater.....		3,077 53			3,077 53
Richibucto.....		6,408 86			6,408 86
River St. John, including tributaries—					
Grand Falls.....	\$1,156 76				
Green River.....	300 00				
St. Francis.....	200 00				
Serpentine.....	250 00				
Tobique.....	444 62				
Generally.....	902 90				
		3,254 28			3,254 28
St. Andrew's wharf.....		1,822 89			1,822 89
St. George.....			499 92		499 92
St. John Harbour, breakwater, &c.....		22,475 51			22,475 51
St. John Harbour (I.C.R. terminus).....	3,755 99				3,755 99
St. Mary's.....			598 02		598 02
Salmon River (Queen's Co.).....	10,244 18				10,244 18
Shepody River.....		4,031 30			4,031 30
Shippegan Harbour.....		4,649 77			4,649 77
" wharf at Lamèque.....		3,617 50			3,617 50
Springhill (York Co.).....	5,283 42				5,283 42
Tracadie wharf.....		512 10			512 10
Tynmouth Creek.....			708 50		708 50
Upper Caraquet.....			1,899 33		1,899 33
Upper Salmon River (Alma Pier).....		240 21			240 21
Generally.....				3,337 40	3,337 40
Totals, New Brunswick.....	28,628 94	108,825 38	38,449 31	3,337 40	179,241 03
Quebec.					
Agnes Pier.....			243 03		243 03
Anse à Beaufile.....		198 87			198 87
Carried forward.....		198 87	243 03		441 90

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PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
HARBOURS AND RIVERS— <i>Con.</i>					
Brought forward.....		198 87	243 03		441 90
Quebec— <i>Con.</i>					
Anse St. Jean			1,010 15		1,010 15
Baie St. Paul			1,510 41		1,510 41
Belœil wharf.....			400 00		400 00
Berthier (en bas)		4,552 79			4,552 79
Boucherville.....	4,097 60		210 00		4,307 60
Cacouna		2,500 82			2,500 82
Calumet.....	1,920 00				1,920 00
Cap de la Madeleine.....			592 04		592 04
Cap Sante.....		2,501 31			2,501 31
Carleton.....		3,725 98			3,725 98
Chicoutimi.....		1,500 84		12 50	1,513 34
Coteau Landing, wharf and dredging.....	5,008 65		986 62		5,995 27
Descente des Femmes.....			50 00		50 00
Dorval.....	3,596 00				3,596 00
Doucet's Landing.....	383 75				383 75
Eboulements wharf.....			799 70		799 70
Father Point pier.....		625 77			625 77
Gatineau River.....		161 53	100 00		261 53
Graham.....	838 10	803 47			1,641 57
Grand Vallée.....		14,857 56			14,857 56
Greece's Point.....		3,498 53			3,498 53
Grenville.....	1,999 70				1,999 70
Grosse Isle Quarantine Station, upper wharf.....		4,008 43			4,008 43
Grosse Isle Quarantine Station, east wharf.....			162 40		162 40
Hudson wharf.....		3,999 40			3,999 40
Hull pier.....		40,977 59			40,977 59
Iberville.....	1,286 21				1,286 21
Isle aux Coudres.....		3,896 35			3,896 35
Isle aux Grues.....		8,522 36	187 30		8,709 66
Isle Verte			798 39		798 39
Kamouraska		1,450 83			1,450 83
Lachine.....	55 00				55 00
Lake Temiscaming.....	460 10				460 10
Lake St. John, wharfs and ports--					
Peribonka.....			396 02		396 02
Rivière Petite Peribonka.....	1,353 87				1,353 87
Rivière à la Pipe.....			5 00		5 00
Roberval.....	243 35		352 00		595 35
St. Jerome.....		1,999 97			1,999 97
Tikouabé.....			140 00		140 00
Generally.....				743 80	743 80
Lanoraie.....			3,999 83		3,999 83
Laprairie ice piers.....			1,057 02		1,057 02
Les Boules.....		1 81			1 81
Les Cuisses, Petite Decharge.....			575 82		575 82
Les Escureuils.....			286 86		286 86
Le Tableau.....		80 85			80 85
Lévis Graving Dock.....		2,226 26		14,866 21	17,092 47
L'Islet.....			50 00		50 00
Lotbinière.....		6,000 00	124 17		6,124 17
Lower St. Lawrence, removal of rocks.....		2,093 22			2,093 22
Magdalen Islands, breakwaters, &c.—					
Amherst.....		11,063 48			11,063 48
Grand Entry.....		814 35			814 35
Grindstone.....		9,036 87			9,036 87
House Harbour.....		162 05			162 05
Magog pier.....			11 34		11 34
Carried forward.....	21,242 33	131,261 29	14,048 10	15,622 51	182,174 23

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PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of work.	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
HARBOURS AND RIVERS— <i>Con.</i>					
Brought forward.....	21,242 33	131,261 29	14,048 10	15,622 51	182,174 23
Quebec— <i>Con.</i>					
Maria isolated block.....		244 81			244 81
Masson.....	4,270 20				4,270 20
Matane.....			1,411 09		1,411 09
Montreal Harbour, improvements below					
St. Mary's current.....		201,722 69			201,722 69
Murray Bay.....		6,792 74			6,792 74
New Carlisle.....			698 80		698 80
Newport.....		741 19			741 19
Nicolet Harbour.....	3,764 60		1,031 28		4,795 88
Ottawa River (Blanche shoals).....	3,863 80				3,863 80
" between Grenville and					
Hawkesbury.....	4,312 40				4,312 40
Papineauville.....	377 50				377 50
Percé (North Cove).....		17,808 81			17,808 81
" old wharf (South Beach).....			598 76		598 76
Pierreville.....	1,814 75				1,814 75
Point aux Esquimaux.....		3,440 89			3,440 89
Pointe Claire.....	5,133 00		150 00		5,283 00
Pointe St. Pierre.....		331 49			331 49
Pond Creek.....			20 00		20 00
Port St. Francis.....	420 00				420 00
Rimouski.....			2,505 32		2,505 32
Rivière au Renard.....		6,514 24			6,514 24
Rivière Blanche (Rimouski Co.).....			792 86		792 86
" Batiscan.....	11,108 68				11,108 68
" Beauport.....		2,982 18			2,982 18
" Cap de Chatte.....		887 72			887 72
" Chateauguay.....	3,530 50				3,530 50
" du Lièvre.....	2,990 76		677 17	856 32	4,524 25
" des Vases.....		499 18			499 18
" du Loup (en bas).....			55 50		55 50
" Noire (Co. Charlevoix).....		999 97			999 97
" Richelieu.....	1,784 00				1,784 00
" St. Louis and Feeder.....		905 61			905 61
River St. Lawrence Ship Channel.....		674,249 34			674,249 34
" St. Maurice between Grandes					
Piles and La Tuque.....	6,394 83				6,394 83
River St. Maurice (at mouth).....	5,955 00				5,955 00
Ruisseau le Blanc.....		2,997 26			2,997 26
St. Alexis, Baie des Ha Ha pier.....		4,000 01			4,000 01
St. André de Kamouraska.....			300 00		300 00
St. Anne de Bellevue.....		699 73			699 73
St. Anne de la Pérade.....			2,997 17		2,997 17
St. Anne du Saguenay.....		3,102 07			3,102 07
St. Emélie.....			225 41		225 41
St. Fulgence.....		502 23			502 23
St. Geneviève.....			1,091 96		1,091 96
St. Ignace.....	1,708 28				1,708 28
St. Irénée.....			1,198 93		1,198 93
St. Johns.....	2,508 70				2,508 70
St. Lambert.....		15,000 13			15,000 13
St. Laurent.....			860 34		860 34
St. Louis Head gate.....				70 00	70 00
St. Marc Wharf.....		3,146 22			3,146 22
St. Mathias.....		1,189 88			1,189 88
St. Michel.....	10,681 26		5,791 23		16,472 49
St. Nicholas.....	680 00		1,785 73		2,465 73
St. Roch des Aulnaies.....		4,430 65			4,430 65
St. Siméon.....			799 53		799 53
Carried forward.....	92,540 59	1,084,450 73	37,039 18	16,548 83	1,230,579 33

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PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
HARBOURS AND RIVERS—<i>Con.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.	92,540 59	1,084,450 73	37,039 18	16,548 83	1,230,579 33
<i>Quebec.—Con.</i>					
St. Sulpice.			268 86		268 86
St. Thomas de Montmagny			364 37		364 37
St. Zotique.			996 75		996 75
Sabrevois.		998 07			998 07
Sorel ice piers.		1,990 83			1,990 83
" deep water wharf.		94,612 37			94,612 37
Tadousac.			1,370 91		1,370 91
Témicouata Lake.		1,185 72			1,185 72
Three Rivers.	1,940 00	1,236 78			3,176 78
Trois Pistoles.			500 50		500 50
Valleyfield	7,893 50				7,893 50
Yamaska.	906 00				906 00
" lock.			57 50	876 92	934 42
Generally.	5,352 83			9,910 10	15,262 93
Totals, Quebec	108,632 92	1,184,474 50	40,598 07	27,335 85	1,361,041 34
<i>Ontario.</i>					
Adolphustown.	395 00				395 00
Bayfield		153 64			153 64
Beaverton			962 55		962 55
Blind River.		16 05			16 05
Bowmanville.	4,464 57				4,464 57
Bronte		7,002 90			7,002 90
Bruce Mines.	4,390 00	718 00			5,108 00
Burk's Falls.			12 78		12 78
Burlington Channel.	1,334 79		2,031 03	2,595 22	5,961 04
Calendar			1,985 72		1,985 72
Cobourg.			3,007 55		3,007 55
Collingwood	41,872 82				41,872 82
Collin's Inlet	9,192 50				9,192 50
Colpoys Bay.		1,399 07			1,399 07
Depot Harbour.		98 59			98 59
Goderich harbour.	9,972 83		12,982 34		22,955 17
Haileybury.		84 50			84 50
Harwood.		499 71			499 71
Hawkesbury.	6,043 73				6,043 73
Hawkeston.			163 35		163 35
Huntsville			18 02		18 02
Kincardine	8,666 11				8,666 11
Kingston.	379 68				379 68
" graving dock.		2,077 06		5,386 86	7,463 92
Kingsville	1,039 64		18,601 73		19,641 37
Lancaster		4,862 77			4,862 77
Leamington		21,487 68			21,487 68
Marksville.			10 25		10 25
Meaford.	34,669 54	6,326 94			40,996 48
Midland	14,204 69				14,204 69
North Bay			1,128 87		1,128 87
Oakville.			6,005 70		6,005 70
Oshawa.	100 00	10,024 83			10,124 83
Ottawa River.	2,436 09				2,436 09
Owen Sound.	7,548 48	20,947 53			28,496 01
Penetanguishene.	9,039 35				9,039 35
Pickering.	648 52	2,000 00			2,648 52
Point Edward	1,657 20				1,657 20
Point Pelee Island		7,779 41			7,779 41
Carried forward.	158,055 54	85,478 68	46,909 89	7,982 08	298,426 19

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PART II.—STATEMENT A.—EXPENDITURE.—Continued.

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
HARBOURS AND RIVERS—Con.					
Brought forward	158,055 54	85,478 68	46,909 89	7,982 08	298,426 19
<i>Ontario—Con.</i>					
Port Arthur		20,371 57			20,371 57
Port Burwell	17,532 27	32,462 42			49,994 69
Port Colborne		183,162 60			183,162 60
Port Elgin	3,290 00				3,290 00
Port Findlay			1,788 00		1,788 00
Port Hope	911 65		3,733 95		4,645 60
Port Stanley	1,272 02				1,272 02
Providence Bay		1,633 00			1,633 00
Rainy River		133 80			133 80
River Kaministiquia	9,989 28				9,989 28
River Thames	7,780 11				7,780 11
Robbins Landing		885 56			885 56
Rondeau harbour	4,811 16		10,036 93		14,848 09
Sarnia	6,525 80				6,525 80
Saugeen River	3,020 78	1,316 96			4,337 74
Sault Ste. Marie		643 88			643 88
Sheguiandah		3,148 70			3,148 70
Southampton		30 00			30 00
South Nation River		4,438 09			4,438 09
St. Joseph's, Lake Huron		4,999 84			4,999 84
Sturgeon Point		500 00			500 00
Summertown			798 99		798 99
Sydenham River	2,266 05				2,266 05
Thessalon	1,044 25				1,044 25
Toronto harbour	6,710 25	31,980 67			38,690 92
Trenton	9,749 00				9,749 00
Wabigoon		3,261 95			3,261 95
Washego			15 00		15 00
Wendover		6,502 22			6,502 22
Wiaraton	240 00	13,516 20			13,756 20
Generally	4,724 10			9,860 10	14,584 20
Totals, Ontario	237,922 26	394,466 14	63,282 76	17,842 18	713,513 34
<i>Manitoba.</i>					
Gull Harbour			207 95		207 95
Hnausa			1,923 67		1,923 67
Lake Manitoba outlets		3,698 80			3,698 80
Red River—Mouth	8,018 81				8,018 81
Selkirk		6 30			6 30
St. Andrews Rapids (Red River)		9,584 56			9,584 56
Wharf on Lake Winnipeg (Gimli)		1,472 26			1,472 26
Generally				2,851 79	2,851 79
Totals, Manitoba	8,018 81	14,761 92	2,131 62	2,851 79	27,764 14
<i>British Columbia.</i>					
Anderson Lake		1,209 57			1,209 57
Columbia River (above Golden)			4,993 64		4,993 64
Columbia River (Upper and Lower Arrow Lakes)		13,958 33			13,958 33
Comox Harbour	4,295 64				4,295 64
Duncan River		1,968 29			1,968 29
Esquimalt Graving Dock		1,200 00		13,277 89	14,477 89
Fraser River	23,070 94	9,982 65			33,053 59
Kennedy Lake		1,289 13			1,289 13
Nanaimo Harbour	4,943 12				4,943 12
Carried forward	32,309 70	29,607 97	4,993 64	13,277 89	80,189 20

PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
HARBOURS AND RIVERS—Con.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	32,309 70	29,607 97	4,993 64	13,277 89	80,189 20
British Columbia—Con.					
Salmon River.....			4,952 12		4,952 12
Serpentine River.....	695 00				695 00
Skeena River.....		6,476 38			6,476 38
Victoria Harbour..	11,088 83	901 59			11,990 42
Williams Head Quarantine Stn. wharf and water service.....			5,978 17		5,978 17
Generally.....				2,058 29	2,058 29
Totals, British Columbia.....	44,093 53	36,985 94	15,923 93	15,336 18	112,339 58
Yukon Territory.					
Lewes and Yukon Rivers.....		55,080 54			55,080 54
Totals, Yukon.....		55,080 54			55,080 54
Harbours and rivers generally— General expenses of staff, &c.....	4,199 12			9,932 69	14,131 81
DREDGES AND DREDGING PLANT.					
Maritime Provinces.		145,840 64	(a)		145,840 64
Ontario and Quebec.		114,276 47	21,911 87		136,188 34
Manitoba.....		9,051 72	1,555 00		10,606 72
British Columbia.....		61,889 12	4,992 65		66,881 77
Totals, dredges.....		331,057 95	28,459 52		359,517 47
SLIDES AND BOOMS.					
Belœil booms.				126 78	126 78
Ottawa District.....		5,733 92			5,733 92
Ottawa River.....			7,583 14	24,073 96	31,657 10
Black River.....			421 05	49 25	470 30
Cheneaux boom, allowance to Improve- ment Co.....				1,418 17	1,418 17
Coulonge River.....			1,971 04	8 50	1,979 54
Dumoine River.....			200 23		200 23
Gatineau River.....			1,691 93		1,691 93
Madawaska River.....			3,941 83	105 25	4,047 08
Petewawa River.....			2,136 82		2,136 82
St. Maurice District.....		153,558 46	13,797 70	37,929 90	205,286 06
Trent and Newcastle District.....			510 73	1,962 65	2,473 38
Collection of slide and boom dues.....				3,529 30	3,529 30
Totals, slides and booms.....		159,292 38	32,254 47	69,203 76	260,750 61

(a) Cost of repair apportioned with dredging, see various harbours in Maritime Provinces.

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PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construction and Improvements.	Repairs.	Staff and Maintenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
ROADS AND BRIDGES.					
<i>Quebec and Ontario.</i>					
Des Joachim bridge, Ottawa River.....		63,265 07			63,265 07
Ottawa, Maria Street bridge.....		30,424 26			30,424 26
Ottawa City bridges and streets maintained by Government—					
Chaudiere bridges and approaches.....		3,158 85	7,748 03		10,906 88
Wellington street.....			3,927 01		3,927 01
Lighting both the above.....				3,052 34	3,052 34
Portage du Fort bridge, Ottawa River.....		16,497 36			16,497 36
York bridge over Grand River.....			993 97		993 97
<i>North-west Territories.</i>					
Banff bridge over Spray River.....			51 54		51 54
Battleford bridge.....		2,650 45			2,650 45
Calgary bridge over Bow River.....			586 05		586 05
Edmonton bridge over Saskatchewan.....		6,501 89	141 79		6,643 68
Lethbridge bridge over Belly River.....			706 93		706 93
Macleod bridge over Old Man's River.....			384 59		384 59
Standoff bridge over Belly River.....		959 67			959 67
Road from Edmonton to Peace River.....		4,676 15			4,676 15
Roads and bridges generally.....				2,699 11	2,699 11
<i>Yukon Territory.</i>					
To repay local council for roads, &c.....		96,586 36			96,586 36
" " (Ogilvie bridge).....		46,162 63			46,162 63
Trails, roads and bridges generally.....		108,951 85			108,951 85
Totals, roads and bridges.....		379,834 54	14,539 91	5,751 45	400,125 90
TELEGRAPH LINES.					
<i>Newfoundland.</i>					
Cape Ray line (subsidy).....				250 00	250 00
<i>Nova Scotia.</i>					
Cheticamp line.....				1,074 87	1,074 87
Meat Cove line.....				1,988 37	1,988 37
" branch, Barachois Bridge to Oregon Glen.....		966 49			966 49
St. Peter's to Louisbourg line.....		150 21			150 21
<i>Prince Edward Island.</i>					
P. E. Island and mainland (subsidy).....				1,946 66	1,946 66
<i>New Brunswick.</i>					
Bay of Fundy.....				1,377 89	1,377 89
Escuminac.....				435 00	435 00
<i>Quebec.</i>					
Anticosti-Gaspé lines.....				4,242 88	4,242 88
Belle-Isle and Chateau Bay, Marconi system.....		1,715 93			1,715 93
Father Point.....				500 00	500 00
Groose Isle quarantine line.....		2,860 84		1,090 28	3,951 12
Carried forward.....		5,693 47		12,905 95	18,599 42

PART II.—STATEMENT A.—EXPENDITURE—Continued.

Name of Work.	Dredging.	Construc- tion and Improve- ments.	Repairs.	Staff and Main- tenance.	Total.
TELEGRAPH LINES.— <i>Con.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.		5,693 47		12,905 95	18,599 42
Quebec— <i>Con.</i>					
Isle aux Coudres line.			12 25		12 25
Magdalen Islands lines.		210 16	610 50	2,309 01	3,129 67
Maritime Provinces and Gulf, generally			4,315 64	2,282 22	6,597 86
North Shore, west of Bersimis.				2,619 94	2,619 94
North Shore, east of Bersimis.		824 22	1,564 86	5,139 04	7,528 12
Romaine to Belle-Isle.		31,458 43			31,458 43
St. Etienne to Anse St. Jean.		536 80			536 80
Tadousac to Sacre-Cœur.		979 05			979 05
Cableship <i>Tyrian</i> —purchase.		20,000 00			20,000 00
" " —rent previous to pur- chase.				11,200 00	11,200 00
" " —fitting up.		28,495 10			28,495 10
" " —maintenance.				17,077 54	17,077 54
Ontario.					
Pelee Island line.		3,082 17		206 87	3,289 04
North-west Territories.					
North-west lines, generally.				18,538 51	18,538 51
British Columbia and Yukon District.					
Alberni-Cape Beale.				1,554 50	1,554 50
Alberni-Clahoquot.		6,485 90			6,485 90
Ashcroft-Barkerville.		3,851 67		10,589 61	14,441 28
Golden-Windermere.		2,586 70		1,441 30	4,028 00
150-Mile House-Quesnelle.		1,057 35			1,057 35
Kamloops-Nicola Lake.				1,019 65	1,019 65
Nanaimo-Comox.				4,640 76	4,640 76
Quesnelle-Atlin.		149,120 25		66,170 13	215,290 38
Vancouver—Salt Spring Island.		433 08		50 00	483 08
Victoria-Cape Beale.				7,927 69	7,927 69
British Columbia, generally.				555 09	555 09
Bennett-Dawson.		3,879 51		130,220 31	134,099 82
Dawson to Fort Egbert.		995 36			995 36
Port Simpson to Hazelton.		64,050 35			64,050 35
Telegraph service, generally.				2,520 23	2,520 23
Totals, telegraphs.		323,739 57	6,503 25	298,968 35	629,211 17

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PART II.—STATEMENT A.—EXPENDITURE—*Continued.*

Name of Work.	Dredging.	Construc- tion and improve- ments.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
MISCELLANEOUS.					
Monument to Hon. Alex. Mackenzie.....		8,030 00			8,030 00
Reception to H. R. H. The Duke and Duchess of Cornwall and York.				141,504 95	141,504 95
Statue of Her late Majesty Queen Vic- toria		8,254 87			8,254 87
Technical and other books of reference.		499 02			499 02
Public Works agency, B.C.				1,317 34	1,317 34
Surveys and inspections.....				34,886 20	34,886 20
Temporary employes—					
Secretary and accountant's staff.....				33,819 28	33,819 28
Chief architect's staff				28,613 47	28,613 47
Chief engineer's staff				69,327 04	69,327 04
Supt. Tel. Service staff				3,110 83	3,110 83
Departemental photographer.....				750 00	750 00
Charlottetown Fire Brigade for assist- ing at fire in public building.....				25 00	25 00
Hiram Easton's claim, damages <i>re</i> Maria st. bridge.....				589 92	589 92
Gratuity to daughter of late Wm. Mc- Donald				90 00	90 00
Gratuity to widow of late A. C. Muir..				200 00	200 00
" to R. Spiers.....				66 67	66 67
" to estate of late Jno. L. Spence				124 00	124 00
" to estate of late Wm. Johnston				130 00	130 00
" to daughter of late J. Robitaille				90 00	90 00
" to widow of late T. Guilbault.				90 00	90 00
" to estate of late E. Pelletier ..				200 00	200 00
" to widow of late J. Richardson ..				90 00	90 00
" to widow of late T. W. Kier..				180 00	180 00
Total miscellaneous.....		16,783 89		315,204 70	331,988 59
RECAPITULATION.					
Totals, Public Buildings—					
Nova Scotia		74,709 10	6,746 58	26,246 34	107,702 02
Prince Edward Island.....			1,969 88	5,625 95	7,595 83
New Brunswick.....		44,710 90	16,005 19	23,136 93	83,853 02
Maritime Provinces generally.....				228 73	228 73
Quebec.....		145,796 72	64,879 76	69,506 94	280,183 42
Ontario		462,599 87	189,493 30	246,547 87	898,641 04
Manitoba.....		459 22	9,842 44	17,643 28	27,944 94
North-west Territories		24,189 62	6,420 49	14,205 76	44,815 87
British Columbia		173,113 69	7,831 42	16,544 28	197,489 39
Yukon Territory.....		244,051 07		127,801 75	371,852 82
Public Building generally				20,081 63	20,081 63
Totals, Harbours and Rivers—					
Nova Scotia.....	39,368 10	156,458 05	30,003 26	13,337 40	239,166 81
Prince Edward Island.....	16,185 45	33,178 26	12,302 27	872 18	62,538 16
New Brunswick	28,628 94	108,825 38	38,449 31	3,337 40	179,241 03
Quebec.....	108,632 92	1,184,474 50	40,598 07	27,335 85	1,361,041 34
Ontario.....	237,922 26	394,466 14	63,282 76	17,842 18	713,513 34
Manitoba.....	8,018 81	14,761 92	2,131 62	2,851 79	27,764 14
British Columbia.....	44,093 53	36,985 94	15,923 93	15,336 18	112,339 58
Yukon Territories.....		55,080 54			55,080 54
Harbours and rivers generally.....	4,199 12			9,932 69	14,131 81
Totals, dredges and dredging plant.....		331,057 95	28,459 52		359,517 47
" slides and booms.....		159,292 38	32,254 47	69,203 76	260,750 61
" roads and bridges.....		379,834 54	14,539 91	5,751 45	400,125 90
" telegraph lines.....		323,739 57	6,503 25	298,968 35	629,211 17
" miscellaneous		16,783 89		315,204 70	331,988 59
Grand totals of expenditure.....	487,049 13	4,364,569 25	587,637 43	1,347,543 39	6,786,799 20

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PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.

Name of Building.	Rents.	Salaries of Engineers, &c.	Heating.	Lighting.	Water.	Total.
<i>Nova Scotia.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Amberst post office.		397 71	245 75	374 37	10 00	1,027 83
Annapolis "		366 67	195 27	147 75	40 00	749 69
Antigonish "		369 13	75 60	79 45	10 00	534 18
Arichat custom house.			59 00			59 00
" post office			100 00			100 00
" savings bank.			50 00			50 00
Baddeck post office.		195 23	134 75	44 25		374 23
Dartmouth "		232 27	107 34	168 35	11 05	519 01
Digby "		33 33	217 75	47 20	30 00	328 28
Halifax appraiser's office, customs.	1,000 00	366 67	198 99		70 63	1,636 29
" Asst. Receiver General's office.	900 00	19 65		75 50	17 40	1,012 55
" Dominion building.		2,298 52	748 61	3,134 00	1,058 59	7,239 72
" drill shed.		780 64				780 64
" engineer's office.	350 00			12 00		362 00
" immigrant shed.		550 00	391 72	557 50		1,499 22
Kentville post office, &c.		369 82	167 67	193 76	50 00	781 25
Liverpool "		366 67	182 80	160 74	15 50	725 71
Lunenburg "		322 93	169 50	180 05	73 75	746 23
New Glasgow post office.		278 49	256 00	360 74	100 00	995 23
North Sydney "		369 82	159 75	436 98	16 50	983 05
Pictou custom house.		9 75	227 64	4 10		241 49
" post office.		378 92	165 90	252 00	4 33	801 15
Sydney "		376 78	140 35	564 61		1,081 74
Truro custom house.				17 80		17 80
" examining warehouse.				11 90		11 90
" post office.		360 58	257 78	360 14		978 50
Windsor post office.		378 05	142 50	266 45	50 00	837 00
Yarmouth post office, &c.		388 90	331 00	569 00	36 00	1,324 90
Total, Nova Scotia, carried to statement A, page 3.	2,250 00	9,210 53	4,725 67	8,018 64	1,593 75	25,798 59
<i>Prince Edward Island.</i>						
Charlottetown Dominion building.	200 00	1,885 38	615 43	1,534 81	281 25	4,516 87
Montague post office.		146 67	82 00	31 25		259 92
Summerside post office.		366 67	302 57	179 92		849 16
Totals, Prince Edward Island carried to statement A, page 3.	200 00	2,398 72	1,000 00	1,745 98	281 25	5,625 96
<i>New Brunswick.</i>						
Bathurst post office.		424 31	391 92	24 00		840 23
Carleton, St. John, post office, &c.		91 67	43 90	88 00		223 57
Chatham post office, &c.		279 50	378 59	180 27		838 36
Dalhousie "		369 42	234 80	28 61		632 83
Fredericton "		377 14	272 44	754 92	49 50	1,454 00
Moncton post office, &c.		366 67	276 00	489 76	167 50	1,299 93
Newcastle "		386 47	332 90	307 50		1,026 87
Portland, St. John, post office.	196 35		36 49			232 84
St. John custom house.	22 00	1,777 83	1,368 43	665 84	511 78	4,345 88
" immigrant shed.		283 15	214 15	258 41	29 11	784 82
" inland revenue office.						
" post office.		1,282 26	652 31	4,414 63	701 33	7,050 53
" savings bank.		0 60	261 53	159 11	18 50	439 74
St. Stephen's post office, &c.		366 67	142 05	462 60	64 00	1,035 32
Sussex "		218 23	307 98	146 75		672 96
Tracadie lazaretto.		112 50	1,140 21			1,252 71
Woodstock, post office, &c.		420 87	217 19	201 25	34 00	873 31
Totals, New Brunswick, carried to statement A, page 4.	218 35	6,757 29	6,270 89	8,181 65	1,575 72	23,003 90

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PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—*Continued.*

Name of Building.	Rents.	Salaries of engineers, &c.	Heating.	Lighting.	Water.	Total.
<i>Quebec.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Aylmer post office.....		56 85	222 49	186 68	24 75	490 77
Berthierville post office.....		7 21	107 70	23 90	10 50	149 31
Buckingham post office.....		2 00	198 48	55 50	10 08	266 06
Chicoutimi engineer's office.....	45 00					45 00
Coaticook post office.....		366 67	186 80	330 30	40 00	923 77
Dundee custom house.....			32 50			32 50
Farnham post office.....		5 77	67 20	107 65	10 00	190 62
Hochelaga post office.....		220 76	123 96			344 72
Hull post office.....	120 00	137 50	286 80	501 73	84 02	1,130 05
Joliette post office, &c.....		366 67	149 59	139 26	108 00	763 52
Lachine post office.....		122 15	96 00	76 75	22 14	317 04
Laprairie ".....		56 22	132 55	24 19	40 00	252 96
Lévis immigrant building.....			46 80			46 80
Montmagny post office.....		8 11		48 75	27 00	83 86
Montreal civil service exam. office.....	100 00					100 00
" custom house.....		1,252 13	615 71	753 88	329 00	2,950 72
" Dom. public buildings gen'lly.....		1,558 37				1,558 37
" drill hall.....		697 50				697 50
" examining warehouse.....		2,259 83	1,954 27	919 88	525 02	5,659 00
" engineer's office.....	437 50				31 00	468 50
" immigration office.....	500 00					500 00
" inland revenue office.....		574 55	215 07	191 40	103 00	1,084 02
" post office, Windsor station..	1,300 00					1,300 00
" ".....	231 84	10,462 22	822 16	5,841 34	867 00	18,224 56
Quebec Citadel buildings.....	14 09	399 45	555 31	281 95		1,250 80
" clerk of works office.....	12 50	48 00				60 50
" cullers' office.....		495 60	352 28			847 88
" custom house.....		654 70	1,081 35	647 69	800 00	3,093 74
" engineer's office.....	132 00					132 00
" examining warehouse.....		1,505 77	745 02	192 00	450 00	2,892 79
" immigrant building.....		104 15	623 30	687 91		1,415 36
" observatory.....					50 00	50 00
" post office.....	1 10	1,467 98	780 74	1,184 37	750 00	4,184 19
" Queen's wharf building.....			547 25		750 00	1,297 25
Richmond post office.....		360 80	228 49	183 46	256 00	1,028 75
Rimouski ".....		158 02	252 17	67 38	25 00	502 57
Rivière du Loup (Fraserville) post office.....	28 00	288 22	266 10	67 20	60 00	709 52
Roberval immigrant building.....		134 17	101 00			235 17
Sherbrooke post office, &c.....		416 47	353 18	997 89	50 00	1,817 54
Sorel ".....		443 72	337 55	384 10	250 00	1,415 37
St. Henri ".....			96 63	114 42	21 96	233 01
St. Hyacinthe ".....		391 20	366 67	739 25	225 00	1,722 12
St. Jérôme ".....		327 34	189 16	192 00	60 86	769 36
St. John's ".....		320 84	94 50	312 50	60 00	787 84
St. Roch ".....			43 16	56 35		99 51
Three Rivers custom house.....		289 24	392 50	180 74	126 00	988 48
" post office.....		409 22	277 25	197 28	62 00	945 75
Valleyfield ".....	513 00		60 80	72 94	37 52	684 26
Victoriaville ".....	1 00	92 40	187 50	125 00	50 00	455 90
Totals, Quebec, carried to State- ment A, page 5.....	3,436 03	26,371 80	13,189 99	15,885 64	6,315 85	65,199 31
<i>Ontario.</i>						
Almonte post office, &c.....		372 59	159 05	125 62	77 50	734 76
Amherstburg ".....		380 16	153 79	150 85	43 75	728 55
Arnprior ".....		371 17	249 36	195 45	50 00	865 98
Barrie ".....		379 17	225 95	172 93	50 00	828 05
Belleville ".....		640 21	501 75	780 35	84 75	2,007 06
Berlin ".....		381 57	282 00	411 73	18 26	1,093 56
Brampton ".....		377 37	144 25	327 71	50 75	900 08
Brantford ".....		577 50	347 04	416 25	19 00	1,359 79
Brockville ".....		366 67	473 80	791 20	170 00	1,801 67
Carried forward.....		3,846 41	2,536 99	3,372 09	564 01	10,319 59

2-3 EDWARD VII., A. 1903

PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—*Continued.*

Name of Building.	Rents.	Salaries of engineers, &c.	Heating.	Lighting.	Water.	Total.
<i>Ontario—Continued.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....		3,846 41	2,536 99	3,372 09	564 01	10,319 50
Carleton Place post office, &c.		280 32	142 00	52 90	.. ..	475 22
Cayuga "		45 84	96 75	46 38	.. ..	188 97
Chatham "		409 86	157 31	248 92	42 50	858 59
Cobourg "		389 77	172 68	395 63	64 49	1,022 57
Cornwall "		530 45	281 00	860 50	75 00	1,746 95
Deseronto " .....		.. ..	23 23	.. ..	.. ..	23 23
Dundas "	500 00	45 84	.. ..	70 00	.. ..	615 84
Galt "		378 27	224 75	324 10	26 25	953 37
Gananoque custom house .....		.. ..	144 75	94 00	.. ..	238 75
" post office .....		.. ..	87 50	141 00	5 00	233 50
Goderich "		388 07	215 22	114 40	60 00	777 69
Guelph "		375 92	205 27	353 20	37 44	971 83
Hamilton drill shed		270 00	.. ..	.. ..	.. ..	270 00
" post office, &c.		1,742 23	1,032 50	1,644 73	1,056 45	5,475 91
Ingersoll "		396 27	74 00	339 03	14 53	823 83
Kingston, custom house		182 90	359 80	114 70	88 00	745 40
" drill shed		125 00	.. ..	.. ..	.. ..	125 00
" inland revenue office .....		.. ..	.. ..	107 70	107 80	215 50
" military college		1,532 85	.. ..	.. ..	.. ..	1,532 85
" post office		148 75	298 25	723 65	48 78	1,219 43
Lindsay post office		381 22	166 31	93 75	30 00	671 28
London custom house.		978 58	693 97	987 64	140 00	2,800 19
" post office		566 00	707 33	1,354 10	80 00	2,707 43
Napanee post office		435 17	270 00	167 25	69 44	941 86
Niagara Falls "		388 72	250 85	406 25	57 50	1,103 32
Orangeville post office		378 40	208 14	151 60	25 00	763 14
Orillia "		269 50	208 80	103 85	32 50	614 65
Ottawa experimental farm .....		.. ..	1,156 66	94 76	.. ..	1,251 42
" geological museum		624 00	912 35	299 90	.. ..	1,836 25
" national art gallery and fisheries museum .....		.. ..	162 50	36 00	.. ..	198 50
" parliamentary and departmental buildings	10 00	35,755 11	34,706 44	17,150 47	.. ..	87,622 02
" post office		864 00	992 00	1,534 30	.. ..	3,390 30
" printing bureau		4,218 46	3,895 37	1,318 50	.. ..	9,432 33
" supreme court		1,440 00	696 32	326 00	.. ..	2,462 32
" government greenhouse		336 00	310 00	.. ..	.. ..	646 00
" Rideau Hall, guard room .....		.. ..	28 00	.. ..	.. ..	28 00
Ottawa rented buildings—						
Census branch (Seybold block) ..	5,850 00	1,389 00	620 00	118 50	.. ..	7,977 50
Customs statistical office (Wellgt'n st.)	1,500 00	336 00	372 00	212 20	.. ..	2,420 20
Exam. warehouse	850 00	.. ..	.. ..	.. ..	.. ..	850 00
French translator's office.	315 00	.. ..	65 74	222 90	.. ..	603 64
Gas inspector's office .....	.. ..	.. ..	.. ..	12 90	.. ..	12 90
Geological museum annex	600 00	.. ..	.. ..	.. ..	.. ..	600 00
Interior dept. (Thistle chambers)...	1,000 00	.. ..	.. ..	.. ..	.. ..	1,000 00
Labour dept. (Molson's bank)	1,200 00	.. ..	.. ..	90 00	.. ..	1,290 00
Marine stores .....	.. ..	.. ..	91 15	.. ..	.. ..	91 15
Militia dept. (Slater chambers)	271 50	.. ..	.. ..	.. ..	.. ..	271 50
Model room (")	1,609 56	.. ..	.. ..	16 00	.. ..	1,625 56
N.W.M. Police stores	1,064 30	.. ..	186 00	77 42	.. ..	1,327 72
Observatory .....	.. ..	.. ..	.. ..	21 50	.. ..	21 50
Post Office (Slater chambers)	540 00	.. ..	.. ..	.. ..	.. ..	540 00
Surveyor general's offices	1,500 00	336 00	378 70	190 91	.. ..	2,405 61
Workshop and yard (Public Works department)	1,886 00	1,296 00	434 00	1,121 10	.. ..	4,737 10
Paris post office .....	.. ..	.. ..	143 08	.. ..	.. ..	143 08
Pembroke " .....	.. ..	374 47	262 91	247 50	28 00	852 88
Peterboro' custom house .....	.. ..	276 00	179 82	207 15	54 00	716 97
Carried forward	18,696 36	61,731 38	54,090 44	35,565 38	2,706 69	172,790 25

SESSIONAL PAPER No. 19

PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—*Continued.*

Name of Building.	Rents.	Salaries of engineers, &c.	Heating.	Lighting.	Water.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Ontario—Concluded.</i>						
Brought forward.....	18,696 36	31,731 38	54,090 44	35,565 38	2,706 69	172,790 25
Peterboro' post office.....		282 80	194 09	537 50	75 00	1,089 39
Petrolea ".....		394 97	172 66	48 00	37 20	652 83
Picton ".....			93 75			93 75
Port Arthur ".....		292 50	177 38	161 95		631 83
Port Colborne ".....		220 00		159 05	10 00	389 05
Port Hope ".....		390 07	232 80	357 65	6 51	987 03
Prescott ".....		386 77	313 45	175 17	176 33	1,051 72
Rat Portage ".....		402 27	418 36	349 44	64 19	1,234 26
Smith's Falls inland revenue office.....					21 25	21 25
" post office.....		281 90	153 70	154 79	63 75	654 14
Stratford post office, &c.....		616 60	347 53	262 12	67 25	1,293 50
Strathroy ".....		371 47	171 50	158 44	2 70	704 11
St. Catharines ".....		383 43	200 27	406 70	57 00	1,047 40
St. Thomas ".....		393 42	312 50	864 60	63 15	1,633 67
Toronto civil service exam. office.....	50 00					50 00
" custom house.....		1,641 79	287 18	308 24	139 22	2,376 43
" drill shed.....		1,100 00				1,100 00
" engineer's office.....	499 00			12 00		511 00
" examining warehouse.....		4,476 44	572 14	170 82	67 70	5,287 10
" inland revenue office.....		615 35	255 35	182 19	26 34	1,079 23
" receiver general.....		304 00				304 00
" post office.....		2,364 17	665 90	3,517 35	330 44	6,877 86
" " branch, station B.....	625 00			1,492 42		2,117 42
" " rent of stable.....	72 00					72 00
" steamboat inspector's office.....	450 00					450 00
Trenton post office.....		366 67	139 40	257 50	75 00	838 57
Walkerton post office.....		386 72	236 31	200 00	31 00	854 03
Windsor drill hall.....			14 65			14 65
" post office.....		745 37	546 91	1,093 63	105 45	2,491 36
Woodstock.....		155 90	215 45			371 35
Totals, Ontario, carried to statement A, page 7.....	20,392 36	78,303 99	59,811 72	46,434 94	4,126 17	209,069 18
<i>Manitoba.</i>						
Brandon Dominion lands office.....		18 30		732 20	100 00	841 50
" experimental farm.....			297 81			297 81
" immigration building.....	84 00		38 15			122 15
" post office, &c.....		550 00	788 07			1,338 07
Dauphin Dominion lands office.....	30 00		17 75			47 75
East Selkirk immigration shed.....			187 50			187 50
Gimli engineer's office.....	15 00					15 00
Minnedosa ".....			151 75			151 75
Portage La Prairie post office.....		375 37	416 94	326 40		1,118 71
Winnipeg clerk of works office.....	25 00	67 25				92 25
" custom house.....		385 30	592 60	263 43	104 49	1,345 82
" Dominion lands office.....			173 00	31 36	26 99	231 35
" engineer's office.....	385 75					385 75
" examining warehouse.....		15 05	169 00	23 59		207 64
" immigration shed.....	50 00	8 00	1,044 00	440 18	367 15	1,909 33
" post office.....		2,453 18	2,091 70	3,665 71	719 37	8,929 96
Totals, Manitoba, carried to Statement A, page 7.....	589 75	3,872 45	5,968 27	5,473 87	1,318 00	17,222 34
<i>North-west Territories.</i>						
Alameda Dominion lands.....	180 00					180 00
" immigration building.....	18 00					18 00
Calgary court house, &c.....		537 50	72 84	72 40	225 00	907 74
" Dominion lands office.....		6 75				6 75
Carried forward.....	198 00	544 25	72 84	72 40	225 00	1,112 49

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PART II.—STATEMENT B.—Showing the cost of the following services for each Public Building, &c.—Continued.

Name of Building.	Rents.	Salaries of engineers, &c.	Heating.	Lighting.	Water.	Total.
<i>North-west Territories—Concluded.</i>	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward	198 00	544 25	72 84	72 40	225 00	1,112 49
Calgary engineer's office	80 00					80 00
" immigrant building			138 50			138 50
" land and registry office			75 68			75 68
" post office		492 75	196 06	513 75	255 00	1,457 56
Edmonton Dominion lands office		369 57		89 20		458 77
" immigrant shed	700 00		137 20			837 20
" post office	18 00			145 50		163 50
Indian Head experimental farm			270 00			270 00
Lacombe immigrant building	207 50		26 00	0 90		234 40
Leduc immigrant building	42 00		107 50			53 00
Lethbridge public building		46 35	11 00		45 00	91 35
" Dominion lands office		385 00				385 00
" post office	18 00			144 69		288 69
Macleod custom house			126 00			107 50
" court house	225 00	161 42	78 40			464 82
" immigrant building	30 00					30 00
Medicine Hat court house		495 00	2 00		7 50	504 50
Moose Jaw court house		367 57	117 50	4 60		489 67
Moosomin "		551 40	377 27	3 40		932 07
Prince Albert immigrant shed			4 50			4 50
" registry office		378 47	357 50	9 00		744 97
Red Deer Dominion lands office	96 00					96 00
" immigrant shed	60 00					60 00
Regina court house		935 00	552 50	182 46		1,669 96
" Dominion lands office		7 40	503 25	51 02		561 67
" inland revenue office		413 31				413 31
" immigrant building			135 00			135 00
" post office		7 65	277 25	6 00		290 90
Strathcona immigrant shed	36 00		231 10			267 10
Wolseley court house		498 05	290 00	43 55		831 60
Yorkton Dominion lands office	360 00		32 50			392 50
Total, North-west Territories carried to statement A, page 8	2,070 50	5,653 19	4,119 55	1,266 47	532 50	13,642 21
<i>British Columbia.</i>						
Agassiz experimental farm			60 48			60 48
Atlin post office		130 50	174 00	46 50		351 00
Esquimalt custom house			12 95			12 95
Kamloops Dominion lands office	142 50		275 10			417 60
Nanaimo post office		564 60	98 00	283 25	27 00	972 85
" court house				18 00		18 00
New Westminster engineer's office	696 00		5 50	23 72		725 22
" post office		556 20	184 71	105 45	20 00	866 36
Vancouver custom house		4 75		563 38		568 13
" drill hall			397 00			397 00
" examining warehouse	990 00			16 47		1,006 47
" post office	100 00	1,169 54	296 25	813 28	75 91	2,454 98
Victoria appraiser's office				6 00		6 00
" drill hall			148 92			148 92
" military store			36 75			36 75
" marine department				26 85		26 85
" public building			465 74		114 10	579 84
" post office	5 56	2,451 70		1,767 95		4,225 15
" custom house		506 25	98 90	53 47	14 75	673 37
" quarantine station			1,024 45			1,024 45
British Columbia generally			564 38			564 38
Total, British Columbia, carried to statement A, page 9	1,934 00	5,383 54	3,843 13	3,724 32	251 76	15,136 75

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STATEMENT C.—Showing amount loaned by government under the authority of special Acts of Parliament, and upon the recommendation of the Hon. the Minister of Public Works, during the fiscal year 1901-2.

Loaned to Harbour Commissioners of Montreal for improvement of harbour (Acts 59 Vic., Ch. 10; and 61 Vic., Ch. 47, and 1 Ed. VII., Ch. 9..... \$550,000 00

A. G. KINGSTON,
Accountant.

DEPARTMENT OF PUBLIC WORKS,
ACCOUNTANT'S OFFICE,
OTTAWA, December 3, 1902.

PART III

REPORT

ON

PUBLIC BUILDINGS THROUGHOUT THE DOMINION

FOR THE FISCAL YEAR ENDED JUNE 30, 1902

BY THE

CHIEF ARCHITECT

REPORT OF THE CHIEF ARCHITECT

DEPARTMENT OF PUBLIC WORKS, CANADA,
CHIEF ARCHITECT'S OFFICE,

OTTAWA, December 2, 1902.

SIR,—I beg to transmit to you, herewith, my annual report on works in connection with the Dominion Public Buildings, that were executed during the fiscal year ended June 30, 1902.

I have the honour to be, sir,

Your obedient servant,

D. EWART,

Chief Architect.

FRED. GELINAS, Esq.,
Secretary,
Public Works, Ottawa.

PROVINCE OF PRINCE EDWARD ISLAND.

SUMMERSIDE.

PUBLIC BUILDING.

The plumbing of the building being insanitary, was taken out and renovated ; a new drain was laid, a new bag rack was supplied, the post office and the entrance steps were repaired.

PROVINCE OF NOVA SCOTIA.

BADDECK.

ARMOURY.

A contract for the construction of this building was entered into August 8, 1901, and the building completed before the close of the fiscal year.

It is a wooden one story building on a stone foundation, the basement unexcavated, measuring 58 ft. by 34 ft. and containing 4 armouries each 28 ft. by 8 ft. and a room each for Q. M. Stores, Q.M., C.O., cleaning, fuel and heating.

Plans &c., prepared by this department.

Clerk of works—D. A. Macdonald.

Contractor—Joseph Treen.

PUBLIC BUILDING.

A new lamp post with lamp was erected in front of building, repairs were made to outhouse and ventilating sashes put in Custom House under the supervision of C. E. W. Dodwell, resident engineer and inspector of public buildings, Nova Scotia, Halifax.

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DARTMOUTH.

POST OFFICE.

The interior was cleaned, the woodwork painted and the walls and ceilings tinted under the supervision of C. E. W. Dodwell, resident engineer and inspector of buildings, Nova Scotia, Halifax.

DIGBY.

PUBLIC BUILDING.

This building which was described in my report of last year has been completed, furnished, fitted up with a hot water heating apparatus and occupied.

Plans &c., prepared by this department.

Clerk of works—David Young.

Contractor for construction of building—Jas. Reid.

Contractor for heating apparatus—Jos. Powers.

HALIFAX.

CUSTOM HOUSE.

On April 19, 1902, a contract was entered into for the construction of this building which is to occupy a plot of ground bounded by Bedford row, George street, Water street and a lane ; with frontages of 106 ft., 86 ft., 107 ft. and 103 ft. respectively—and will form three sides of a quadrangle open towards Water street.—The building will consist of a basement and 4 stories, excepting an enclosed two storied domed block 40 ft. by 40 ft., the basement of which is to contain the examining warehouse and the ground floor the Customs long room. On the corner of George street and Bedford row is to be a two story clock tower. The architectural style is classic ; the outer walls being of cut stone throughout with free columns of the Corinthian order extending through the first and second floors of the Bedford row and George street frontages. The main entrance to the ground floor will be on Bedford row, the general basement entrance on George street and the examining warehouse on Water street—Two main stairways leading from basement to third floor are provided, one on George street abutting against the tower and the other occupying a corresponding position on the lane frontage—and beside each of these stairways an elevator is to be fitted up. Brick vaults are provided for the use of the officers, viz : one in the basement and three on each of the ground, first and second floors. The heating and lighting plants are to be placed in the basement. A lavatory and closet room is provided on each flat, viz : in the rear of the stairs on the lane frontage ; all such lavatories and closets being in the same relative positions.

Plans, &c., prepared by this department and work superintended by C. E. W. Dodwell, resident engineer and inspector of buildings, Nova Scotia, Halifax.

Local Architect—J. J. Busch.

Contractor—M. E. Keefe.

DOMINION BUILDING.

Repairs were effected to the east pediment, coping and chimney, also to heating, plumbing, windows, locks, vaults, lock boxes, clock, electric wiring, painting and glazing and some new furniture supplied. The building was decorated on the occasion of the visit of T. R. H. the Duke and Duchess of Cornwall and York. Repairs supervised by C. E. W. Dodwell, resident engineer and inspector of public buildings, Nova Scotia, Halifax.

Decoration supervised by L. F. Taylor of this department.

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DRILL HALL.

New washout closets and urinals were provided, improvements and alterations of electric lighting were made and repairs were effected to windows, doors, eaves gutters, down spouts and boilers. Work supervised by C. E. W. Dodwell, resident engineer and inspector of public buildings, Halifax, Nova Scotia.

IMMIGRATION BUILDING.

A new safe was supplied, the building was jacked up, and repairs were made to heating, plumbing, roof and doors; some alterations of lighting was done and some new locks, bolts and linoleum supplied under the supervision of C. E. W. Dodwell, resident engineer and inspector of public buildings, Halifax, Nova Scotia.

LAWLOR'S ISLAND, QUARANTINE STATION.

One hundred and sixty (double) iron ship berths were set up in detention buildings, the wharf was refloored and repaired, an ambulance was supplied, five hydrants were set up and connected, a combined well and filter constructed, and five portable spray pumps, as well as a quantity of hose, nozzles, &c., supplied. A wooden building 26 feet by 15 feet for use as a bacteriological laboratory was built, a new roof was put on the mercuric chloride tank, which was painted; a board walk was laid at the rear of the bath-house to the south end of the disinfection shed, and a picket fence was built from the disinfection shed to the corner of the fence about the disinfection wards. Work supervised by C. E. W. Dodwell, resident engineer and superintendent of buildings, Halifax, Nova Scotia.

MIDDLETON.

ARMOURY.

A contract was entered into on June 3, 1902, for the construction of this building on Commercial street. The building is to be one story of wood on a stone foundation. The plan is cruciform, the main portion 75 feet by 33 feet, and the arms, in one of which is the main entrance, 33 feet by 16 feet, 6 in. each. The basement is unexcavated excepting under the front arm, where the furnace and fuel rooms are situated. A passage five feet in width runs across the building from front to rear a distance of 66 feet, dividing the building into two equal portions. On the right of the entrance is the furnace room, which extends upward from basement; on the left the Q.M. stores each 15 ft. 6 in. by 13 ft. In the main portion of the building there is on the right hand an armoury 30 ft. by 31 ft., and on the left a recreation room of like dimensions. In the rear wing are an officers' room on the right, and a C. O. room on the left, each 15 ft. 6 in. by 13 ft.

Plans, &c., prepared by this department.

Clerk of works, L. P. Young.

Contractors, Allen, Son & Neily.

SPRINGHILL.

PUBLIC BUILDING.

This building, which was described in my report of last year, is now completed.

Plans, &c., prepared by this department.

Clerk of works, D. M. Mattinson.

Contractor for the building, Jas. Reid.

Contractor for heating, Frank Powers.

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PROVINCE OF NEW BRUNSWICK.

CARLETON (ST. JOHN WEST).

POST OFFICE.

The arch between main building and adjunct was repaired, as were the brick wall and masonry of walls. One chimney was taken down and rebuilt and the others repaired. The arch in hall and adjunct was rebuilt and minor repairs done to plumbing, joinery and painting. The building was decorated in honour of the visit of T.R.H. the Duke and Duchess of Cornwall and York.

All the foregoing under the supervision of D. H. Waterbury, of this department, St. John, N.B.

FREDERICTON.

PUBLIC BUILDING.

The old metal roof was replaced by a new one of galvanized iron, also new copper gutters and conductors and some additional slating on mansard. A new brick floor was laid in first floor hall, and repairs were effected to post office boxes, wood work, and painting.

Work supervised by D. H. Waterbury, of this department, St. John, N.B.

MARYSVILLE.

PUBLIC BUILDING.

On February 10 a contract was entered into for the construction of this building, which is to be two stories of brick on a stone foundation, 43 feet frontage by 33 feet in depth. The floors partitions and roof are to be of wood. The ground floor is to be the post office, over which are to be five rooms. A small wooden building in the rear for latrines.

Plans, &c., prepared by this department.

Clerk of works, H. M. Clarke.

Contractor, C. J. B. Simmons.

NEWCASTLE.

PUBLIC BUILDING.

The yard was laid in asphalt and a sidewalk of similar material laid around the building. Repairs were effected to the area platforms, water conductors, floors, window sills, gates, &c., and some painting done.

Work supervised by D. H. Waterbury, of this department, St. John, N.B.

PARTRIDGE ISLAND (ST. JOHN).

QUARANTINE STATION.

Hot water heating apparatus has been fitted up in the two detention buildings and some fittings supplied.

Works supervised by D. H. Waterbury, of this department, St. John, N.B.

PORTLAND (ST. JOHN, NORTH.)

POST OFFICE.

Yard was improved by a cedar bulkhead and earth filling to prevent surface drainage flowing into cellar. A new floor was laid in the barn and back porch, new entrance steps in rear erected, some plastering and painting was done, repairs were made to dormer windows, shop fronts, plumbing, painting, glazing, doors, windows, &c., and some cleaning, painting and papering done. The building was decorated on the occasion of the visit of T.R.H. the Duke and Duchess of Cornwall and York.

Work done under the supervision of D. H. Waterbury, of this department, St. John, N.B.

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ST. JOHN.

CUSTOM HOUSE.

A brick partition was built dividing a long room in upper basement into offices which were plastered, painted and fitted up. The warehouse rooms of Marine Department in lower basement were re-arranged, a new door put in, &c. The offices and halls, throughout as well as the entrance doors and all the windows, were repainted, grained and varnished. The cresting of roof was painted, a new door at foot of signal tower was hung, additional electric bells and gas lights were supplied and new plumbing done. New furniture was supplied and repairs were done to copper roofing, heating boilers, woodwork, plumbing, hoist, painting and glazing. The building was decorated and illuminated on the occasion of the visit of T. R. H. the Duke and Duchess of Cornwall and York.

All the foregoing under the supervision of D. H. Waterbury, of this department, St. John, N.B.

IMMIGRATION BUILDING.

A contract for the construction of this building, which was described in my report of last year, was entered into on 2nd December, 1901, and the work is now well advanced. On May 12, 1902, a contract for the construction of a hot water heating apparatus was entered into,

Plans, &c., prepared by this department.

Work supervised by D. H. Waterbury of this Department, St. John, N.B.

Clerk of works, G. V. Beatty.

Contractor for construction of building, J. H. Pullen.

Contractor for heating, R. F. Fitzgerald.

POST OFFICE.

An office for Assistant Post-master was partitioned off on general delivery floor, and a portion of hallway on first floor was partitioned off and furnished for use of typewriter of P. O. Inspector. A new birch floor was laid in general delivery and another in first floor hallway. New entrance doors have been substituted for those existing which were too heavy. A new stamp vendors wicket was put in as well as some additional letter boxes and pigeon hole cases. The interior woodwork was cleaned and painted and some tinting of walls and ceilings done. A sewer basin and trap was placed in the floor of the basement where horses stand, some of the ceilings in basement were plastered, the exterior stonework was pointed, additional bins and shutters were furnished and repairs were made to windows, water-closets, lavatories, &c.

The building was decorated and illuminated on the occasion of the visit of T. R. H. the Duke and Duchess of Cornwall and York.

All the foregoing under the supervision of D. H. Waterbury, of this department, St. John, N.B.

SAVINGS BANK.

The masonry of retaining walls and side of building was pointed, the arch at end of area repaired and asphalt patched. Repairs were made to gas pipes, boiler, &c., and some bank fittings supplied.

The foregoing under the supervision of D. H. Waterbury, of this department, St. John, N.B.

SUSSEX,

ARMOURY.

On 9th July, 1901, a contract was entered into for the construction of this building and the work is now nearing completion. It is to be a one story wooden building on a

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stone foundation and have a flat roof covered with tar and gravel. It measures 67 ft. frontage and 85 ft. from front to rear. Midway of one side there is a basement 24 ft. broad extending inward 37 ft. with a ceiling 8 ft. high and a concrete floor. The basement is for use as a furnace room. On the ground floor are to be 14 armouries each 28 ft. in length, ranging from 9 ft. 9" to 14 ft. 9" in breadth and having ceiling 14 ft. in height. A hallway 6 ft. wide extending from front to back divides the building into two equal blocks of 7 armouries each. There is a skylight to light the hallway. All the partitions, ceilings and walls of the ground floor are of wood.

A hot water heating apparatus has been installed.

Plans, &c., prepared by this department.

Clerk of works, Jas. R. McLean.

Contractors for building, Wallace Bros.

Contractor for heating system, H. H. Dryden.

PROVINCE OF QUEBEC.

BUCKINGHAM.

POST OFFICE.

This building which was described in a previous report is now completed, fitted up and furnished, and has a hot water heating apparatus and incandescent electric lighting.

Plans, &c., prepared by this department.

Clerk of works, A. Labelle.

Contractor, L. J. Fauteux.

DRUMMONDVILLE.

PUBLIC BUILDING.

This building which was described in my report of last year has been completed, fitted up and occupied.

Plans, &c., prepared by this department.

Clerk of works, F. X. Lemaire.

Contractors for building and fittings, Paquet & Godbout.

Contractor for hot water heating, Albert Beauchesne.

GRANBY.

PUBLIC BUILDING.

On November 2, 1901, a contract was entered into for the construction of this building on the corner of Cowie and Main streets with frontages of 74 feet and 41 feet, 6 inches respectively. The main portion is 41 feet, 6 inches by 36 feet, 6 inches; two stories, basement and attic, and the adjunct 37 feet, 6 inches by 21 feet 6 inches. A square tower on the angle of the two streets. is carried up an additional story finishing in a pyramidal roof and having 4 cut stone pedimented clock face. The walls of the basement are stone and those above of brick with stone dressings, the partitions, floors and roof are wood, the sloped roofs being covered with slate, the main deck with felt, tar and gravel and the tower roof, dormers, cornices and hips with galvanized iron. The ground floor of the main building is the post-office, that of the adjunct the examining warehouse and weights and measures office; on the first floor are the Customs and Inland Revenue Offices, and in the attic are caretaker's apartments. On each floor, excepting the basement, is a water closet room, that on the ground floor having also a sink, on the first floor two lavatory basins and in the attic, bath and a lavatory basin. There is a lavatory basin in each office of the first floor.

Plans, &c., prepared by this department.

Clerk of works—Wm. Cox.

Contractors for building—Dussault & Pageau, Quebec.

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GROSSE ILE.

QUARANTINE STATION.

New coal bins No. 1 and a baggage shed Nos. 2 and 3 were built on wharf to replace burnt structures.

Disinfection shed No. 4.—The roof of this building was covered with new galvanized iron; the windows were repaired; part of brickwork around boilers was done over; exterior of building was painted.

A shed, No. 5, was built to house new electric light plant.

First class detention building, No. 7.—The chimney was lengthened and the inside of the kitchen was painted. A new plank walk was laid from steps to wharf.

Detention shed No. 11.—This was straightened; cedar sills were renewed, posts repaired, and two ventilators built on roof.

Detention sheds Nos. 13 and 14 were straightened and posts repaired.

Chimney of kitchen, No. 15, was lengthened.

Bakery No. 19.—The kiln was repaired and the chimney was also lengthened.

Engineer's quarters, No. 39, was painted in and out.

Police quarters, Nos. 40 to 43.—Cedar sills were renewed, new floors were laid in kitchens, and building was painted in and out.

Assistant medical officer's dwelling, No. 100.—The whole of the exterior was painted, and some painting and papering was done to the interior. Winter sashes and storm doors were supplied.

The parsonage, No. 106.—The exterior of house and shed were painted.

The English church, No. 108.—All exterior woodwork was painted.

Superintendent's residence, No. 127.—Baths, w.c.s., sinks and drainage were put in. Platform was built and stairs to river were repaired. Roofs of outbuildings, No. 130 to 133 were tarred. Water was brought to Nos. 130, 131, 137. A new ice house was erected for the use of the superintendent.

Signal Station.—A bastion was built of stone masonry for flag-staff and a platform was erected for the guns.

Boat house, No. 139 was overhauled, cedar sills, floor, sheeting and shingles were renewed.

Sailors' quarters, No. 144 to 151.—Repairs were done to stone foundations and to plastering. The exterior was painted and roofs were tarred. New platforms were built. A new floor was put in No. 146. In the school-house, No. 150, a new floor was laid and the ground floor walls were sheeted and painted.

Kitchens, No. 152 to 155 were straightened and generally repaired, new sills were put in, roof shingles were repaired and tarred. Nos 153 to 154, were lengthened and floors repaired, two new doors and four windows were supplied.

The Catholic church, No. 163.—A new hardwood floor was laid and building was painted in and out.

The Presbytery, No. 164.—Shingle roof was repaired, exterior was painted and some painting and papering was done to the interior. Some carpets, oilcloth and furniture were supplied.

Ambulance shed, No. 169.—Painted outside.

Bakery, No. 170.—Minor repairs were made to house, the kiln was rebuilt, tank, force pump, w.c., basin and sinks were put in, exterior was painted.

Baggage shed on lower wharf. No. 177 was painted outside.

Friends of the sick, No. 200.—Interior was sheeted and roof was repaired, w.c.s., baths, showers, lavatory basins and hot water boiler were put in.

Hospital, No. 203.—Fireplace in kitchen was rebuilt, repairs were made to plastering of several rooms, verandah was renewed, all of exterior woodwork was painted. A sidewalk was laid from hospital to disinfection shed.

Disinfection shed, No. 206, was sheeted inside and put on new sills.

Hospital employees' quarters, Nos. 208 to 212—Whole of exterior was painted.

Smallpox hospital, No. 222.—Nurse's room was sheeted and painted.

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A morgue and a store-house, two old buildings in the cemetery, were pulled down and a new structure was erected instead, No. 225.

Water was brought to the different buildings in the Central division. Fences were tarred and generally repaired.

Waterworks were put in by O. Picard & Fils, under the supervision of J. Cowan, of this department. The electric light plant was supplied and installed by Ahearn & Soper, under the supervision of J. Johnson, also of this department; balance of work was carried out by day labour, under the supervision of Ph. Béland, clerk of works, Quebec.

HOCHELAGA.

POST OFFICE.

This building which was described in my report of last year has been completed, fitted up and occupied.

Plans and specifications prepared by Messrs. Perrault and Lesage, Montreal, P.Q.

Contractors for building and fittings, Martineau & Sons, Montreal, P.Q.

Contractors for heating apparatus, Alex. Mackay & Son.

HULL.

POST OFFICE.

This building has been completed and occupied.

Plans, &c., prepared and work supervised by this department.

Clerk of works—V. Laflamme.

Contractors—Joseph Bourque and Chas. Lemoine.

LÉVIS.

CATTLE QUARANTINE.

Sheds Nos. 2, 12, 13, were moved and rebuilt.

Sheds Nos. 4, 18, 19, 21, 22, 23, 24 and 26 were rebuilt; sills, floors, roofs, &c., were renewed.

No. 16.—A new sheep barn, 60 feet by 18 feet, was built.

No. 20.—Leant-o was rebuilt, and a new feed shed added.

No. 23.—Feed shed resingled.

Fences were repaired and new fences built.

Work carried out under the supervision of Ph. Béland, clerk of works, Quebec.

MONTREAL.

POST OFFICE.

Caretaker's quarters were fitted up in the attic of this building. Heating, electric light and water service was provided, also wash basins, baths, water-closets, etc.

A fire-escape was fitted up at the east side of the building.

The covering of the upper part of main cornice as well as the gutters were renewed in copper.

New cupboards were provided for the letter carriers.

The room in which is located the electric motor for the elevators, was made fire-proof.

The scales for weighing newspapers were repaired.

Pigeon-holes were supplied for the letter carriers.

All electric motors were repaired; and new steel cables for the elevators were supplied and put in place.

Repairs were made to the plate at letter box on St. James street, and to the chutes.

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A bag rack, with pigeon-holes, etc., were supplied for the use of the mail clerks at the Windsor Station.

Works executed under the supervision of C. Desjardins.

CUSTOM HOUSE.

Considerable repairs were made to this building.

A large number of partitions were removed and alterations were made to the interior arrangement generally.

New vaults, with fire-proof fittings, etc., were provided.

Hardwood floors were laid in the various new offices.

A tile floor was laid in main hall on ground floor, and marble steps were laid at entrance steps. A new dado was built in main hall.

Glass partitions were provided in the offices ; and new cupboards, carpets, furniture, etc., were supplied to the record room. Alterations and additions were made to the plumbing.

The gas and heating systems were put in good repair and some new coils were supplied.

The covering of dome, as well as 260 feet of gutters were renewed in copper.

A new mast was provided.

All the foregoing under the supervision of C. Desjardins.

EXAMINING WAREHOUSE.

The walls and ceilings of the attic were limewashed, and the woodwork was painted.

New sills were put on fifty-six windows.

New steel cables were provided and put in place in connection with the elevators.

Repairs were made to the gas and heating systems.

The roof was repaired.

Important improvements, alterations and additions are now in progress in this building, and are expected to be completed during the course of 1902-03.

The foregoing under the supervision of C. Desjardins.

INLAND REVENUE BUILDING.

Repairs were made to the roof and gutters ; furniture was supplied, as well as a new hose, all under the supervision of C. Desjardins.

IMMIGRATION BUILDING.

New signs were provided outside the building, and furniture and carpets supplied for the office, under the supervision of C. Desjardins.

PERIBONCA AND ROBERVAL.

IMMIGRANT BUILDING.

These are two buildings similar in plan for which a contract was entered into October 11, 1900. Each is a 2 story building on a pile foundation 45 feet by 25 feet with a one story lean-to woodshed, 14 feet by 16 feet, in the rear. There are two rooms on each floor, one for each sex, divided by a stairway hall which runs from front to rear. The ground floor rooms are for waiting and dining, those above for sleeping. There is a chimney at either end. A detached one story wooden building 11 feet by 16 is a latrine.

Plans, &c., prepared and work superintended by this department.

Clerk of works—A. B. Carbonneau.

Contractor—A. Godbout.

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QUEBEC.

ARTILLERY WORKSHOP.

A contract was entered into on May 27, 1902, for the erection of this building on Artillery Park grounds.

The building is to be 158 feet by 72 feet and of one story. Foundations to be of rubble masonry; walls, to base course, to be of coursed ashlar backed with brick; and from base course up, to be of brick. Roof to have trusses and columns of steel, purlins and boarding of wood, covered with paper and copper. Floor to be of tamarac blocks laid on concrete foundation. At one end an office and a store, room are to be partitioned off.

Plans etc., prepared by this office; clerk of works, Ph. Béland; contractor Wm. Stuart.

CITADEL, GOVERNOR GENERAL'S QUARTERS.

This building was overhauled for the reception of the Duke and Duchess of York and suite. The walls of basement were whitewashed and some repairs were made to the plastering. Floors were repaired and a new floor was laid in the corridor of the basement. Windows and shutters were repaired. A wing for tent room was erected on the terrace, next to ball-room; it is of frame with roof supported by two columns, covered with galvanized iron, and finished with gutter and fall pipes. The inside was lined with a canvas tent, and the outside painted. The house was wired for electric light, fixtures and shades were supplied. The bell service wiring was renewed and two indicators, eight batteries and three bells were put in. Repairs were done to plumbing and drainage; two w. c.s. were renewed; the closet wing was sheeted on the outside and made frost-proof. The servants' quarters were cleaned, painted and whitewashed, and three chimneys were built. Three stoves, some blankets, quilts, pillows, linoleum, mats, carpets, a new flag and some thermometers were supplied. A kiosk—with a platform leading to it—was erected on the King's bastion for the reception and torn down later. A temporary carriage shed was put up and was also taken down. A coal bin was built in the basement and the area covered over for the winter.

Ph. Béland, clerk of works.

CUSTOM HOUSE.

Floor of Public Works stores room was renewed. Toilet room, first floor, was painted. In attic, repairs were done to plastering of caretaker's quarters; a floor was laid in the kitchen. Minor repairs were made to roof and chimneys. A door spring was put on main door. A blackboard and some furniture were supplied. A new vault door with combination lock was put in long room. Some furniture was repaired. Grounds and trees were attended to, some filling in and seeding was done. The snow was removed from the roof. This building was decorated with flags and electric lights for the ducal reception.

Ph. Béland, clerk of works.

EXAMINING WAREHOUSE.

The whole of radiators, mains and returns of heating system were taken out and renewed. Pointing was done to walls and chimneys. A hood was built over Harbour Commissioners' door. Repairs were made to iron of roof, to skylight, and to boilers. Carpets and rugs were supplied for appraiser's office. One chair was supplied and three repaired. The snow was removed from roof.

Clerk of works, Ph. Béland.

IMMIGRATION BUILDING, LOUISE BASIN.

This building was levelled; sills, posts and part of floor were renewed; extensive repairs were done to plastering of ceilings and walls; caterer's kitchen ceiling was

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sheeted with metallic plates; a large cupboard was built, sink table was covered with lead. Floors of lavatories were painted, walls and ceilings of guards' room were sized and painted. Dining room was painted. Rear platform was renewed in part. Assistant matron's quarters were painted, papered and carpeted; parlour, dining room, kitchen and bedroom were furnished completely; window blinds, rugs, bedding, crockery, cutlery, stoves, kitchen utensils, &c., were supplied. Bell service was repaired, two new bells and eight batteries were supplied. Rugs were purchased for assistant agent's room.

Clerk of works, Ph. Béland.

MARINE AND IMMIGRATION BUILDING, AND QUEEN'S WHARF.

Repairs were made to floor beams and stairs of store-room. For the ducal reception the wharf, fences, sheds and pontoon were repaired; a new gangway was built; the building, shed, blacksmith, shop and fences were painted; arches and masts were erected and decorated; the place was illuminated by thousands of electric lights; buildings and grounds were decorated generally. Later these decorations were taken down. An engine house was built at head of slip. Grounds were left in good order.

Clerk of works, Ph. Béland.

POST OFFICE.

Painting, plastering, tile floor and doors of lobby were repaired. A new general delivery screen was put in; stamp vendor's counter was cleaned, old wire screen removed and replaced by plate glass. In post office new sorting frames, tables, racks, &c., were supplied. Repairs were done to safe of money order office. Locks were supplied and repaired. Some glass was renewed. Electric clocks and bells were attended to. Electric light wiring and fixtures of post office were renewed. A blackboard was supplied. Sundry repairs were made to carpentry. One dozen Lepage door checks were placed on different doors. A window was cut in wing. A cupboard was built in clerk of works' office. Some furniture was supplied and repaired. A new asphalt walk was laid on du Fort and Buade streets, which necessitated some new masonry, stone steps, &c. A new brass front was placed on street receiver. The usual annual cleaning was done. This building was decorated for the reception of the Duke and Duchess of York. Masts were erected on du Fort street, and flags, banners, shields and lights were used for the purpose.

Street boxes were painted.

Clerk of works, Ph. Béland; asphalt laid by J. B. N. Barbeau.

ROLLING MILL AND CARTRIDGE FACTORY.

This building was described in last year's report, and is completed all but the painting and heating.

Clerk of works, Ph. Béland.

TELEGRAPH OFFICE.

Some boxes were supplied to this office.

Clerk of works, Ph. Béland.

PROVINCE OF ONTARIO.

BROCKVILLE.

DRILL HALL.

This building is completed and occupied.

Plans, &c., prepared by this department.

Clerks of works—J. B. Mix and Robt. Purvis.

Contractor—D. S. Booth.

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DESERONTO.

PUBLIC BUILDING.

This building which was described in a previous report is nearly completed and plans for the post office fittings, heating apparatus and furnishings are in course of preparation.

Plans, &c., prepared and work superintended by this department.

Clerk of works—John Dalton.

Contractor—Richard Sheehy.

DUNDAS.

ARMOURIES.

This building which was described in my report of last year has been completed and fitted up with a hot water heating apparatus.

Plans, &c., prepared by this department.

Resident Architect and clerk of works, W. A. Edwards.

Contractor for building—Jos. Bowman.

Contractor for heating system—Adam Clark.

HAMILTON.

PUBLIC BUILDING.

Two newspaper sorting frames were supplied, the walls and ceilings of post office were cleaned, tinted and painted, the woodwork of main stairway and halls was cleaned and varnished, the weights and measures hall ceiling and walls were kalsomined and the floor painted, the elevator was overhauled, altered and supplied with new lifting cables, new fastenings and checks were furnished the entrance doors and some new window shades and curtains supplied.

KINGSTON.

GYMNASIUM, ROYAL MILITARY COLLEGE.

On June 24, 1902, a contract was entered into for the construction of this building which is to be one story and basement measuring 120 feet by 55 outside, 10 feet from basement floor to ground floor, 22 feet from ground floor to spring of roof, 28 feet from floor to ceiling and 52 feet from basement floor to apex of roof.

The gymnasium hall floor is to be 85 feet long by 50 feet wide, 14 feet of the total inside length, at either end under the gallery, being divided into rooms; that at one end for use as the main entrance, the stairway, hall and a spare room; at the other, for three bath rooms. The gallery extends the full length of the building, 113 feet, and at each side is 6 feet in width. The basement is to contain the heating apparatus and stores.

The walls are to be stone and the partitions brick, the walls to be 7 feet above ground floor brick-lined. The floor of basement is to be concrete, and that of ground floor wood, carried on steel beams. The roof ceiling and lining of walls from 7 feet above ground floor are wood.

Plans, &c., prepared by this department, and work carried out under the supervision of Arthur Ellis, local architect and clerk of works, Kingston, Ont.

Contractors—Sullivan & Langdon.

KINGSTON.

HOSPITAL BUILDING, FORT FREDERICK.

This building, which was described in my report of 1900-1, has been completed, fitted up with a hot water heating apparatus and occupied.

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Plans, &c., prepared by this department.

Local architect and clerk of works—Arthur Ellis.

Contractors for building—Sullivan & Langdon.

Contractors for heating apparatus—Martel & Langelier.

OTTAWA.

GOVERNMENT HOUSE.

The Hall.—The roof of the verandah was entirely renovated; 2 skylights were put in roof opposite offices of A.D.C. and comptroller; 2 new bath and closet rooms were fitted up, one on ground floor off ball room passage, the other on first floor, a portion of room 15; the drawing room and the library were renovated, decorated, wainscotted and provided with new mantels, grates, hearths, doors, cornices, gas fittings, &c., and an opening was made through wall to ventilate A.D.C.'s w. c. The old potting shed, the furnace room and the wood shed were demolished to give place to new green-house and a new potting shed and furnace room, 38 feet by 14 feet by 16 feet in height, with hopper roof erected. An addition of 43 feet by 13 feet was made to the stove house, and the entire stove house refitted with plant tables, beds, shelves, ventilating apparatus and a new hot water heating apparatus. A new cold house, 42 feet by 13 feet, was built at back of vinery wall and fitted up with tables, beds and ventilating apparatus. The iron smoke stack of chapel was replaced by a brick chimney. The plastering throughout the building was repaired, and a large number of the rooms and passages had ceilings and walls tinted, and the woodwork of 28 rooms painted, as well as the brick walls, chimneys, &c., of ball room, tennis court, ante-rooms, kitchen and housekeeper's wing, cornices and porches outside. Eight rooms were re-papered, 785 lights of glass were glazed in new green-house and stove house, 20 new hot bed sashes were supplied, and a large quantity of broken glass renewed. Five hundred and eighty yards of new carpet and 15 rugs were laid, while 2,730 yards of carpet and 30 rugs were taken up, repaired, cleaned and relaid. Fifty-one pairs of window curtains, 2 blinds, 3 sets of bed curtains and a quantity of material for short curtains were supplied. Nine hundred and twenty-nine yards of various materials for curtains and covering screens, pillows, sofas, tables, &c., together with 10 squares for table covers and loose covers for 31 chairs, 17 sofas, 4 screens and 8 cushions were supplied. Three table cloths and 24 pairs of blankets were supplied. Of new furniture supplied, there were 40 chairs, 9 screens, 4 sofas, 13 tables, 8 cushions, 3 stands, in addition to which there were a fair quantity of repairs and renewals among the existing furniture. Of ornaments supplied: 6 vases, 12 trays, 10 lamp shades, 4 pieces of delf-ware, 3 pairs of andirons and fenders, also 12 portable baths and 12 wicker hampers. A quantity of porcelain was supplied, as also a large number of kitchen utensils, principally copper, 125 in number.

Rideau Cottage.—A French drain was built along side wall on south side; a new bedroom fireplace was put in, and 2 screens covered.

Stables, &c.—The stablemen's mess room was demolished and rebuilt of larger size, 40 feet by 18 feet by 13 feet high, of wood, painted. A wood shed 18 feet by 16 feet by 13 feet high, of wood, painted, was erected for the use of the stables, as well as a shed 24 feet by 12 feet for hay and feed.

Root House.—An addition, 30 feet by 16 feet, was made to root house.

Gardener's House.—The porch was shored up and a new flight of steps thereto from sidewalk put up; the kitchen wall was wainscotted, the ceilings and walls were tinted and papered and the woodwork painted, two clothes closets were built in bedrooms.

Extensive repairs and renewals were made to the toboggan slides, the sidewalks throughout the grounds and the fences. Of the fences, 1,750 feet lineal were rebuilt, 250 feet of new fence was put up, 2,325 feet was overhauled and made good, and the remainder had minor repairs effected to it. All the tile pipes in courtyard were taken up and replaced by cast iron pipes. The main drain to the bay was opened up, cleaned and relaid. The flight of steps from lean-to veranda at tennis court was entirely renewed. A flight of granolithic steps was put down between the upper and lower level of flower garden.

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Extensive repairs were made to heating, plumbing, electric lighting and electric bells, as also to roof covering, eaves troughs, down pipes, &c. The 3 level boat house pier at the bay was thoroughly repaired and filled with stone. The boat house was fitted with racks for 6 canoes. The lighting of the avenues was changed from gas to electric, the conduits being placed in trenches, and additions were made to the lighting at the hall and the various buildings.

The fences, sheds, greenhouses and varandas were painted or repainted as well as the cricketers' pavilion.

A large variety and number of gardening tools and necessities were supplied for kitchen and for flower garden as well as bulbs, plants, seeds, &c.

Some of the hedges were grubbed out, some grading, sodding and treeplanting was done, and the main avenue was gravelled, rolled and otherwise improved. The ice-houses were packed with ice. The roofs, paths, slides, rinks, &c., were cleared of snow by the departmental staff, by whom the grounds, lawns, gardens and plant-houses were maintained.

The usual periodic cleaning and the packing and unpacking were done; arrangements for and attendance on entertainments were furnished, and the rinks, slides, &c., kept in order.

Work carried out and maintained under the supervision of this department by the departmental staff.

Clerk of works, Wm. H. Hutchison.

ROYAL OBSERVATORY, CENTRAL EXPERIMENTAL FARM.

Plans and specification are prepared and tenders invited for this building which is to consist of a central domed portion 34 ft. in diameter, 4 stories in height exclusive of basement and dome chamber for equatorial, having the main stairway in rear and flanked by two wings 49 ft. by 49 ft. of two stories and basement. The front walls of these wings are not in the same straight line each with the other but each is deflected backwards about 15° from a right line. The external walls are to be stone—the partitions of brick; the basement floor is to be concrete but elsewhere the floors are to be of iron beams carrying terra cotta arches covered with cement overlaid by hardwood flooring; the roof is to be of concrete on iron framing and covered with felt, tar and gravel—The basement walling is to be of local limestone, that above of Nepean sandstone with the cut stone of brown sandstone.

The basement is to contain the rooms for standard testing instruments, clock rooms, record rooms, a workshop, battery rooms, a heating and fuel room for the janitor. On the ground floor the main entrance is on the middle of the main front and opens into a circular room 28 ft. in diameter the centre of which is occupied by a circular shaft 13 ft. in diameter which goes from the foundation of basement up to the equatorial room. In the rear of the main entrance is the main staircase. To the right are two rooms for astronomers, a time service room, a computing room and a w. c. room. To the left are the director's office, the library, a computing room, the correspondent's room, a messengers room and a waiting room. On the first floor are the photographers room, the observers room, a draughting room and a lecture room. Heating is to be by hot water.

Plans and specifications prepared and work to be superintended by this department.

POST OFFICE BUILDING.

5 rooms were cleaned, tinted and painted; the doors of 28 rooms were numbered and lettered; two partitions one of wood and glass, the other of brick were constructed; 6 dozen chairs and a like number of cushions were repaired; the furniture was oiled and varnished and there were furnished 3 cupboards, 2 steel drawer cases, 2 large pigeon hole cases, 6 window deflectors and 2 tables.

Work supervised by F. Breton, clerk of works.

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PRINTING BUREAU.

15 new w. c. tanks were put in to replace a like number condemned. Some bell hanging and some gas fitting were done and a new cable supplied the elevator.

The porches and passages were cleaned, tinted and painted; some glass partition was erected and a bookcase supplied. The repairs to carpentry and joinery keep one workman constantly employed.

Work done under the supervision of F. Breton, clerk of works.

WESTERN BLOCK, DEPARTMENTAL BUILDING.

Portable electric lamp-stand were installed, 1 in Marine department, 1 in Inland Revenue department, 2 in Public Works department and 5 in Marine department. Drop lights were installed; 9 in Marine department, 8 in Inland Revenue department, 14 in Public Works department, 3 in Customs department and 1 in Trade and Commerce. one 3-light electric bracket was installed in Public Works department. Telephones were installed: 1 in Marine department, 1 in Inland Revenue department, and 1 in Public Works department. Electric bell-hanging was done in Marine department, 19 conductors and 7 call bells, in Public Works department 2 bells, and in Trade and Commerce and Railways departments new and extended connections. New sinks were fitted up: 1 in Inland Revenue and 1 in Public Works department; a table covered with slate and lead was provided for the analyst, Inland Revenue, and a lead-lined water tank for the photographer, Public Works. 330 feet of 1 inch steam pipe in coils was put in for the last-named official. Seventeen rooms were cleaned, tinted and painted; 9 floors were filled and varnished; 28 office doors were lettered; the new photographic studio was fitted up with partitions, tables, desks, tanks, screens, trestles, trucks, &c., &c.; 2 lounges and 6 chairs were recovered; 110 pieces of furniture were repaired and 165 pieces cleaned, shellacked and varnished; 4 rooms were fitted up with open shelving; a new window and fanlight was supplied as well as were the following articles of furniture viz:—2 steel and 1 oak file cabinet, 1 chest drawers, 6 book cases, 26 cupboards, 5 cases shelving, 11 tables, 2 pairs trestles, 7 step ladders, 11 deflectors, 6 hardwood chests, 2 plan racks, 3 screens and rods, 10 curtains and rods, 75 sets map rollers, 4 high desks, 5 desk slopes, 1 kitchen dresser, 1 set pigeon holes, 4 green baize doors, 1 pine stand, 2 battery racks, 2 ventilators, 5 screens, 21 chair cushions, 1 cherry mantel piece, 35 stretcher frames, 6 dozens clothes hooks with boards, 1 telephone box, 6 Yale locks and one new partition with shelving.

Done under the supervision of this department.

Wm. King, Mechanical engineer—F. Breton, clerk of works.

LANGEVIN BLOCK.

Two new tubular steam boilers were set up in basement and cased in brickwork. The electrical pumps were thoroughly overhauled and put in good running order. There were installed in Department of Agriculture: 2 electric droplights, in the Interior Department 7, and in the Post Office Department 17 as well as 33 re-arranged—all with switches &c., and some shades. In the Agriculture Department the electric bells were readjusted, 3 new bells hung and in the Interior 3 new bells. Eight rooms were cleaned, tinted and painted; 500 pigeon holes were lettered, 8 cases of ordinary shelving and two cases with 430 roller shelves were supplied as also 16 tables, 3 glazed partitions, 2 pigeon hole cases, 1 steel drawer case, 1 file cabinet, 4 book cases, 2 sorting frames, 3 step ladders, 3 fire screens, 5 window deflectors, 2 doors, 10 pairs of curtains with brass rolls and 3 leather cushions, 90 pieces of furniture was repaired and 65 pieces cleaned, painted and varnished.

All under the supervision of this department.

Wm. King, mechanical engineer.

F. Breton, clerk of works.

EASTERN BLOCK, DEPARTMENTAL BUILDING.

There were 3 drop electric lights installed in the Secretary of State Department and 6 in the Finance Department—three portable lamp stands in the Auditor General's

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Department and two in the Finance Department. Two wash basins were fitted up, one in the Secretary of State Department and one in the Justice Department. Three telephones were installed for the Privy Council office. Speaking tubes were put up between messenger's rooms, Indian Affairs Department. One steam radiator was fitted up in Finance Department. Twenty rooms were cleaned, tinted and painted; 7 doors were recovered with green baize, 3 new hard wood floors were laid; 8 tables and 2 high desks were recovered with cloth; 2 rooms were fitted up with steel cases, one of which contained 1,500 steel drawers; 14 chairs and 3 sofas were reupholstered; 212 pieces of furniture were cleaned, oiled, shellacked and varnished, and 65 pieces repaired; also there were furnished 4 cupboards, 3 bookcases, 2 steel cabinets, 8 tables, 2 step ladders, 2 curtains, 2 fire screens, 1 desk and 2 window frames.

All done under the supervision of this department.

Wm. King, mechanical engineer.

F. Breton, clerk of works,

CENSUS BOARD OFFICES.

A fan with electric motor was installed to ventilate the w.c's on two floors. Six rooms were wired for electric light, 21 droplights with shades &c. Two new wash-basins and one sink were fitted up.

LABOUR BUREAU.

Two portable gas stands were supplied.

MILITARY STORE BUILDING.

This building, which was described in a previous report, has been fitted up and furnished, supplied with a hot water heating apparatus and electric elevator and made ready for occupation.

Plans, &c., prepared by this department.

Clerk of works, P. Canty.

Contractors for the building, Joseph Bourque & Chas. Lemoine.

Contractors for heating, Messrs. Martel & Langelier.

Contractor for electric elevator, J. Fensom.

Contractor for fittings, W. G. Hurdman.

GREENHOUSE, CONSERVATORY AND POTTING HOUSE, MAJOR'S HILL.

This building, which is situated near the northwestern angle of the Major's Hill Park, has been in course of construction during the year 1901, and is now nearly completed. The potting shed is of stone, 28 feet by 19 feet, consisting of a basement, ground floor and cockloft, is lined with brick and has brick partitions and brick chimney. The basement floor is of concrete, while that of the ground floor is of wood, of which also is the roof. The potting shed which is situated 5 feet from the northeastern side of the greenhouse is an oblong, 70 feet long by 20 feet broad, 33 feet from floor to apex of roof and 19 feet from floor to spring of roof. A portion of the extreme southeastern end, 12 feet broad by seven feet long is carried up 11 feet from floor line capped by a pyramidal roof 17 feet from floor to apex. Attached to the northwestern end of the greenhouse is the conservatory which is in the form of a Greek cross, 40 feet by 40 feet, the arms 17 feet broad, the centre an octagon, 30 feet in minimum diameter. The walls of this octagon are 25 feet high from floor to spring of roof, 44 feet from floor to lantern and 65 feet from floor to apex of lantern exclusive of finial. The lantern is 13 feet in diameter. The arms of the cross are of the same height as the greenhouse. Both conservatory and greenhouse have a stone foundation extending up to the top of the plant tables, 5 feet from floor. The floor throughout greenhouse and conservatory is concrete. The framing of the glazed portions is composite, the parts being of 3 in. iron pipe

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the remainder principally wood. The plant tables are of iron and wood. Heating is by hot water. The stonework is limestone, random coursed, with cut stone plinth, cut stone dressing to openings and cut stone entrance steps..

The heating is by a hot water system.

Plans, &c., prepared and work superintended by this department.

Clerk of works, P. Cauty.

MAJOR'S HILL PARK.

The grounds about the new conservatory have been graded and sodded. New ornamental trees and shrubs have been planted throughout the grounds and the water service extended.

DEPARTMENT OF CUSTOMS ANNEX—WELLINGTON STREET.

The basement flat of the building was fitted up with open shelving, under the supervision of F. Breton, clerk of works.

IMMIGRATION COMMISSIONERS OFFICE—QUEEN STREET.

This is a suite of rooms rented in the Imperial Building. 1 portable lamp stand and some electric bells installed.

PARLIAMENT BUILDING.

That portion of the boiler house to the south of the tramway was unroofed and the south wall of the tramway was taken down to foundation level whence it was rebuilt and carried up three further stories, giving additional rooms on ground and first floors as well as a committee room in attic with a floor area of 2,800 square ft. and a ceiling 20 ft. in height. This room was fitted up with folding seats, a brass bar on standards from end to end, separating the seating from the standing room, and a mechanical ventilation plant installed. Tempering steam coils, 500 square ft. surface, were fitted up in the plenum chamber to which fresh air taken directly from outside was supplied by a cone fan propelled by an electric motor, and 19 steam radiators and 1 steam coil were installed as direct heating surface in the new extension. On either side of the main public lobby was constructed a passenger elevator with a travel from basement to attic; one adjoining the Commons' stairway and the other that of the Senate. A bath, lavatory and w. c. were fitted up in the new rooms of the Deputy Speaker, House of Commons, a new bath in the quarters of the Speaker of the Senate with all necessary water service and drainage. A drinking fountain was fitted up near the entrance of the Senate Chamber and the sink in the paste room, House of Commons, was relined. There were 154 16 c. p. lamps installed in the new extension and 960 10 c. p. lamps over the glass ceiling of the Senate, also a number of lamps in the galleries. There were installed in various offices 1-1 light electrolier, 4-3 light electroliers and 1 drop light. The electric bells of the Commons and Senate, were rewired and annunciators of 100 points and 50 points respectively placed in the respective messengers' rooms. 6 division bells were wired in attic of extension, 1 bell wired for Speaker of Commons and 1 for room of Minister of Public Works. New speaking tubes from Commons and Senate lobbies to boiler house were put in.

The inside sashes of library throughout were replaced by new and a number of the sashes repaired. The Senate Chamber ceiling was reglazed with prismatic glass similar to that in House of Commons, the skylights were overhauled and extensively repaired and extension alterations of the housekeeper's quarters were effected. Two hardwood floors were laid; 14 rooms were cleaned, tinted and painted; all hard-wood floors were oiled and varnished and all the floors of passages and stairs painted, a large quantity of bronzing and gilding was done, 8 doors, 5 lounges, 12 tables, 8 desks, 20 chairs as well as all the chairs and tables in library were recovered; the walls of both large committee rooms were sheeted for maps, all the new rooms were fitted with picture moulding,

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the new offices of the debates' reporter were furnished throughout, the windows of the new Railway Committee room were curtained in green baize, a large quantity of new shelving was put up in library and furniture supplied generally as follows : 5 cupboards, 10 curtains, 500 map rollers, 3 tables, 30 dozens hat hooks and rails, 200 chairs, 4 green baize doors, 2 map racks, 1 case of shelving and 1 pigeon hole case.

Work done under the supervision of Wm. King, mechanical engineer.

F. Breton, clerk of works.

SURVEYOR GENERAL'S OFFICES.

There were installed 93 droplights, 6 portable lamp stands, 6 wall brackets, 1 2-light pendant, 2 4 light pendants, 2 hall lanterns and 1 3 light ceiling cluster with reflectors, all for electric lights and with shades, switches, &c.. 3 electric bells were wired for and 1 wash-basin fitted up.

REPAIRING STREETS, ETC.

Scraping, cleaning and minor repairs were done to the various roadways and streets under the control of the department. Rubbish, scrapings and ashes were removed from the east block, west block, parliament buildings, the workshops, printing bureau, the museums and the various streets and deposited at Nepean Point ; the grass at geological museum was kept clipped and the ashes removed from the boiler houses ; the roadways, sidewalks, footpaths, roofs, and yards were kept clear of snow during the winter.

Work done by the departmental staff, C. Leblanc, foreman.

PARLIAMENT GROUNDS.

Alterations of and additions to the shubbery and flower beds were effected. The iron fence on the street lines was painted.

SUPREME AND EXCHEQUER COURT BUILDING.

4 double and 6 single sections of book-case and one large cupboard were supplied.

BUILDINGS AND GROUNDS GENERALLY.

In addition to the works mentioned in the foregoing, there are innumerable smaller works, e.g., there were provided for the various departments 675 packing cases, the painters glazed 453 panes of glass as well as executed 325 items of painting under separate requisitions and there were 375 such works done by the carpenter's staff ; 675 days of plasterers' work and 1975 days of masonwork, besides many items unrecorded. And besides all these in connection with the various buildings, the property of the government, there are similar works of repair, painting, furnishing, tinting, &c., in connection with a number of rented buildings, also such works as repairs to and renewals of coal and other sheds as well as works of a general character, such as the erection and taking down of porches, the winter boarding of outside steps, the moving of furniture, the putting up and taking down of summer blinds and winter sashes, the beating of carpets, minor repairs to glazing, painting, woodwork, furniture, &c., the removal of the snow from the ground, buildings, roads, foot-paths, which work was done by the departmental staff.

PARIS.

PUBLIC BUILDING.

This building which was described in my report of last year, has been completed and occupied.

Plans, &c., prepared by this department.

Clerk of works, Duncan Mackay.

Contractor for building and fittings, Wm. Griffiths.

Contractors for heating, Martel and Langelier.

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PICTON.

This building which was described in my report of last year, has been completed and occupied.

Plans, &c., prepared by this department.

Clerk of works, P. M. Pulver.

Contractor, Robert Cameron.

PRESCOTT.

POST OFFICE AND CUSTOM HOUSE BUILDINGS.

The town having established a waterworks plant and drainage system, the public buildings were fitted up with water-closets, baths, sinks and basins and connections made with the town water service and drainage.

Plans, &c., prepared by this department.

Contractor, Chas. Baker.

ST. THOMAS.

ARMOURY.

This building which was described in my report of last year has been completed, fitted up, furnished with a hot water heating system and an electric light plant and occupied.

Plans, &c., prepared by this department.

Clerk of works, N. R. Darrach.

Contractors for building and fittings, Green & Co.

Contractor for electric lighting, Jas. Aitcheson.

Contractor for heating system, P. Leclerc & Son.

SARNIA.

PUBLIC BUILDING.

This building, which was described in a previous report is in progress and is expected to be completed during the new fiscal year.

Plans, &c., prepared by this department.

Clerk of works, Marcus R. Burrows.

Contractor, Geo. A. Proctor.

TORONTO.

POST OFFICE.

All the work done at this building consisted of minor repairs under the supervision of S. G. Curry, architect.

The building was decorated and illuminated on the occasion of the visit of T.R.H. the Duke and Duchess of Cornwall and York.

CUSTOM HOUSE.

The custom-house lane was repaved under the supervision of S. G. Curry, architect.

The building was decorated and illuminated on the occasion of the visit of T. R. H. the Duke and Duchess of Cornwall and York.

EXAMINING WAREHOUSE.

Extensive changes were made in the express department and in the fittings of the hardware department on the first floor. The yard between the customs lane and the examining warehouse was paved and the fence renewed and rebuilt. All under the supervision of S. G. Curry, architect.

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RECEIVER GENERAL'S AND INLAND REVENUE BUILDINGS.

A door was cut through the wall from the weights and measures office, some furniture was supplied and some repairs effected. All under the supervision of S. G. Curry, Architect.

WINDSOR.

DRILL SHED.

This building was completed and occupied during the fiscal year.

Plans &c., prepared by this department.

Clerk of works, Charles Smith.

Contractors for buildings and fittings, Sullivan & Langdon.

Contractors for heating system, Martel & Langelier.

WOODSTOCK.

PUBLIC BUILDING.

Completed and occupied.

Plans &c., prepared and work superintended by this department.

Local architect and clerk of works, Alexander White.

Contractor, Jos. A. DesRivières.

PROVINCE OF MANITOBA.

WINNIPEG.

CUSTOM HOUSE.

Repairs were made to plumbing and glazing and some furniture and linoleum supplied.

Work done under the supervision of J. Earnest Cyr, acting clerk of works, Winnipeg, Man.

WINNIPEG.

DOMINION LANDS OFFICE.

Repairs were made to the boilers, plumbing and chimney and a few articles of furniture supplied.

Work supervised by J. Earnest Cyr, acting clerk of works, Winnipeg, Man.

EXAMINING WAREHOUSE.

Minor repairs were made to plumbing and glazing under the supervision of J. Ernest Cyr, acting clerk of works, Winnipeg, Man.

IMMIGRATION HALL.

A considerable quantity of plastering was done, the wall and ceilings were cleaned and tinted, the building was wired for electric lighting, a new stairway was put in, repairs were effected to plumbing and range and a number of articles of furniture supplied. All under the supervision of J. Ernest Cyr, acting clerk of works, Winnipeg, Man.

POST OFFICE.

A new steam pump and a new safe were supplied, a new vault built and some new glazed partitions constructed. Extensive repairs were made to boilers, plumbing and plastering. Repairs were also made to elevator, electric bells, skylight, lock boxes &c., All the foregoing supervised by J. Ernest Cyr, acting clerk of works, Winnipeg, Man.

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NORTH WEST TERRITORIES.

LETHBRIDGE, ALTA.

IMMIGRANT BUILDING.

A contract was entered into August 27, 1901, for the construction of this building which is of wood, 2 stories, on a stone foundation 45 feet, by 25 feet, with a one story lean-to kitchen 14 feet, by 16 feet in the rear. There are two rooms on each floor, one for each sex, divided by a stairway hall which runs from front to back. The ground floor is for waiting and dining rooms and the upper floor for dormitories. There is a one-flue chimney at each end. A small detached one story outbuilding 11 feet by 16 feet for use as a latrine.

Plans &c., prepared by this department, and work carried out under the supervision of Chas. Raley, clerk of works.

CARNDUFF, ASSA EAST.

COURT HOUSE

Plans have been prepared and tenders invited for the construction of this building, which is designed to have a stone basement, surmounted by two stories of wood, and an unfinished cockloft. The building is to measure 31 ft. by 28 ft., exclusive of an adjunct 20 ft. by 10 ft., to contain the principal entrances and staircase. The basement is to contain the heating furnace and fuel. There are two brick chimneys. The ground floor is to contain a guard-room, a N. C. O. room, a constable's room, three cells, an entrance (stairway) hall, two rear entrance vestibules and a rear stairway. The first floor is to contain a court-room 31 ft. by 27 ft., exclusive of bay for dais, a stairway hall, a judge's room, two jury rooms and a room for the bar.

In the rear are two one-story detached buildings, one a coal shed 30 ft. by 11 ft., and the other a latrine 12 ft. by 10 ft.

Plans, &c., prepared by this department.

SASKATOON, SASK.

IMMIGRATION BUILDING.

A contract was entered into October 22, 1901, for the construction of this building, which was completed before the close of the fiscal year. It is a wooden two-story building on a pile foundation 46 ft. by 35 ft., with a one story lean-to woodshed 14 ft. by 16 ft. in the rear. There are two rooms on each floor, one for each sex, divided by a stairway hall which runs from front to back. The ground floor is for waiting and dining rooms and the upper floor for dormitories. There is a chimney at each end. A small detached one story wooden outbuilding 11 ft. by 16 ft. for use as a latrine.

Plans, &c., prepared by this department.

Clerk of works, John Morrison.

Contractor, James Leslie.

BRITISH COLUMBIA.

KAMLOOPS.

ARMOURY.

A contract for the construction of this building was entered into April 29, 1902, and the work is now in progress. It is being built on a site having a frontage of 50 feet on street and extending back 120 feet to a lane in rear. It is to be a wooden one-story building with a span roof and on a stone foundation. It is to measure 42 feet front by

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86 feet in length, exclusive of a front porch which extends eight feet outward, with a breadth of 13 feet. The ground floor has a main hall at the front, 40 ft. by 59 ft., with heights of 15 feet from floor to spring of roof and 28 feet to apex. At the rear a portion 24 ft. by 40 ft. is divided into three rooms for armoury, officers' room and stores. Below this portion there is an excavated basement, with concrete floor and 8 feet high ceiling, for heating apparatus and fuel. There is a brick chimney in the rear from basement.

Plans, &c., prepared by this department.

Contractor, D. H. Campbell.

KASLO.

ARMOURY.

A contract for the construction of this building was entered into March 15, 1902, and the work is still in progress. It is to be similar in construction to the foregoing, is to be built on a site having a frontage of 75 feet on Fifth street by a depth of 110 feet.

Clerk of works, John Milligan.

Contractor, D. J. Maclaughlin.

NANAIMO.

PUBLIC BUILDING.

The original shingles were removed from the roof and replaced by slates, the tin covering of deck removed and replaced by tar and gravel and the eaves, gutters and roof vallies renewed. Two hundred new lock boxes were fitted up in post office and grille work on money order counter. Offices on front floor were altered and fitted up for Inland Revenue Department.

Work done under supervision of Wm. Henderson, of this department, Victoria, B.C.

NELSON.

ARMOURY.

A contract was entered into April 20, 1903, for the construction of this building, which is to be similar in construction to that at Kamloops excepting that it is brick veneered, and is to be built on a site having a frontage of 50 feet on Victoria street, and a depth of 120 feet to the alley in rear.

Contractor, W. G. Gillett.

PUBLIC BUILDING.

This building, which was described in my last report, has been carried on continuously since, and is expected to be completed early in the next fiscal year.

Plans, &c., prepared by this department; construction supervised by Wm. Henderson, of this department, Victoria, B.C.

Clerk of works, J. A. Macdonald.

Contractors, Viau & Lemoine.

NEW WESTMINSTER.

PUBLIC BUILDING.

Building completed and fitted up for occupation.

The building was decorated and illuminated on the occasion of the visit of Their Royal Highnesses the Duke and Duchess of Cornwall and York.

Plans, &c., prepared and work superintended by this department.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

Clerk of works, Alex. Hamilton.

Contractors for construction of building, Bourque & DesRivières.

Contractor for heating, Jos. Lamarche.

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REVELSTOKE.

ARMOURY.

On June 18, 1902, a contract was entered into for the construction of this building, which is to be similar in construction to that at Kaslo. It is to be situated on a lot having a frontage of 50 feet on Second street, and extending back 100 feet to lane.

Contractor, John Kernahan.

ROSSLAND.

PUBLIC BUILDING.

This building, which was described in my last report, has been completed and fitted up with a hot water heating apparatus and is now being furnished for occupation.

Plans, &c., prepared by this department.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

Clerk of works, R. W. Gregor.

Contractor for building, Thos. Bradbury.

Contractor for heating, W. E. Vanstone.

VANCOUVER.

DRILL HALL.

Completed and occupied. This building was decorated and illuminated on the occasion of the visit of T.R.H. the Duke and Duchess of Cornwall and York.

Plans, &c., prepared by this department.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

Clerk of works, Thos. McKinnon.

Contractors, Viau and Lachance.

PUBLIC BUILDING.

Alterations were made to provide new dead letter office, new office for postmaster, new money order office and new postal parcels office, all of which were fitted up, furnished, lighted and supplied with the necessary plumbing, &c., large quantities of new fittings and furniture were supplied, repairs were made to heating apparatus, roof covering, plumbing, lighting and fittings, some new bells were hung and telephones wired for and the building was decorated and illuminated on the occasion of the visit of T.R.H. the Duke and Duchess of Cornwall and York.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

VICTORIA.

OLD CUSTOM HOUSE.

Repairs were made to water service and plumbing, some hose, stoves, stove pipes, &c., were supplied and the building was decorated and illuminated on the occasion of the visit of T.R.H. the Duke and Duchess of Cornwall and York. All under the supervision of Wm. Henderson, of this department, Victoria, B.C.

PUBLIC BUILDING.

An electric heater was placed in vault in examining warehouse to keep dynamo for freight elevator dry and some spare armatures and fields for the same supplied. The contact plates of the passenger elevator were repaired and some new fuse blocks supplied same. Electric wiring was repaired in long room, postmaster's room and public lobby, electric bells were repaired in P.O. inspector's room, collector's office and long room. New blinds were supplied offices of postmaster, collector of customs and P.O.

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inspector. New carpets were laid in offices of postmaster and post office inspector. A bookcase was supplied for long room, new double doors and some stoves and pipes for examining room in basement. The inland revenue offices were supplied with new batteries for electric bells. Repairs were done to several typewriters, chairs, bells, plumbing, &c. Twelve new storm sashes were supplied, rubber strips placed on windows and a stepladder and ensign supplied.

This building was decorated and illuminated on the occasion of the visit of T.R.H. the Duke and Duchess of Cornwall and York.

All under the supervision of Wm. Henderson, of this department, Victoria, B.C.

OLD POST OFFICE.

Two rooms on front floor were painted and papered, a new ensign was supplied, the drain was cleared and repairs were made to plumbing, plastering and glazing.

The building was decorated and illuminated on the occasion of the visit of T.R.H., the Duke and Duchess of Cornwall and York.

The foregoing was done under the supervision of Wm. Henderson, of this department, Victoria, B.C.

WILLIAM'S HEAD.

QUARANTINE STATION.

The following buildings were constructed during the fiscal year:—

New Boiler House—This is an addition to the steam disinfection building, is 46 ft. long by 20 ft. broad, and contains a new boiler with the original boiler, which was moved here from the disinfection building, its place being taken by a supplementary steam disinfection chamber. In connection with this a new smoke stack was built.

Assistant-Superintendent's Residence—This is a one-and-a-half story wooden building, 44 ft. by 44 ft., with basement and with a one-story adjunct, 22 ft. by 12 ft. in rear. On the ground floor is a living room, a dining room, a kitchen, a laundry, two bedrooms, a servant's room and a pantry; above are four bedrooms. There are plumbing, drainage and heating.

Engineer's (steamer Earl) residence.—A wooden one-and-a-half story building, 32 ft. by 34 ft. without basement, having a one-story adjunct in rear 23 ft. by 13 ft. On the ground floor are parlour, living room, dining room, hall, bath room, closet, pantry, kitchen and shed; above are three bedrooms. There are plumbing and drainage.

Cottage Hospital—A brick one-story building 40 ft. by 22, with on one side a small adjunct 12 ft. 6 in. by 6 ft., and on the other a veranda 6 ft. wide by a full length of the building. It contains a ward, a bath room, a kitchen, a nurse's room and a pantry, all in the main portion, with a servant's room in the adjunct. The floors are of concrete and there is no basement. There are plumbing and drainage.

Laboratory Building—This is a one-story brick building 32 ft. by 33 ft., containing the office, laboratory and rooms for incubation, guinea pigs, gas machine, boiler and supplies. There are heating, plumbing and drains.

Also there were built a storehouse, a lockup, a boathouse, a naphtha and coal house and a cook house for Chinese and Japanese, as well as a covered way and fence on wharf.

The poles of the William's Head telephone line, eighteen miles in length were renewed and the wire re-strung. Old fences blown down by wind storm were re-erected and repaired and some new fence erected. All the new buildings were painted, as were the power and disinfection house, the first-class detention building, the large shed on wharf, tank and pump house, superintendent's stable, watchman's house, Chinese and Japanese building and steamer *Earl*. The steamer *Earl* was repaired and a new boiler supplied.

Work supervised by Wm. Henderson, of this department, Victoria, B.C.

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GENERALLY.

On the occasion of the visit of T.R.H. the Duke and Duchess of Cornwall and York, the Parliament and departmental buildings, the grounds, Major Hill Park and the bridges at Ottawa were illuminated and decorated.

Repairs and alterations have been executed and sundry articles of furniture, &c., provided, and cleaning, painting and other improvements carried out in connection with a number of buildings not herein reported.

D. EWART,
Chief Architect.

PART IV.

CHIEF ENGINEER'S REPORT

ON

HARBOUR AND RIVER WORKS

INCLUSIVE OF

GRAVING DOCKS AND DREDGING OPERATIONS

ALSO

ROADS, BRIDGES AND SURVEYS THROUGHOUT THE DOMINION

REPORT OF THE CHIEF ENGINEER

DEPARTMENT OF PUBLIC WORKS OF CANADA,
CHIEF ENGINEER'S OFFICE,
OTTAWA, November 25, 1902.

FRED GÉLINAS, Secretary,
Department of Public Works.

SIR,—I have the honour to submit my report on the various works under my charge during the fiscal year ended June 30, 1902.

These works comprise the construction and repair of wharfs, piers, breakwaters, dams, weirs, bank and beach protection works; the improvement of harbours and rivers by dredging; the construction, maintenance and operation of government dredging plant; the construction and maintenance of graving docks: the construction, maintenance and working of slides and booms, the construction and maintenance of inter-provincial bridges, and approaches thereto, and of bridges on highways, of federal importance in the North-west Territories and the maintenance of military roads; also hydrographic and ordinary surveys and examinations, inclusive of precision levelling and geodetic measurements which are required for the preparation of plans, reports, estimates, &c.

I have the honour to be, sir,

Your obedient servant,

EUGENE D. LAFLEUR,
Acting Chief Engineer.

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List of Surveys made during the Fiscal Year 1901-2.

Mossy River, Man.	Great Salmon River, N.B.
Portneuf, Que.	East End, Cape Is. N.S.
Tusket, N.S.	Georgian Bay, Ont.
Ste. Adelaide de Pabos, Que.	Green Cove, N.S.
Magnetawan, Ont.	North Head, Grand Manan, N.B.
Memphremagog, Que.	Baitlet's Brook, Lismore, N.S.
St. Jean Ile d'Orleans, P.Q.	Wallace, N.S.
St. Simon, P.Q.	Poirierville, N.S.
Rimouski, P.Q.	Pointe Fortune, Que.
St. Irenée, P.Q.	Aultsville, Ont.
Lower Montague, P.E.I.	Chateau de Sylva, Que.
Higgin's Shore, P.E.I.	Richard's Landing, Ont.
Puce River, Ont.	Fraser River, B.C.
Belle River, Ont.	Ship Harbor and Jeddore Lakes, N.S.
River L'Assomption, Que.	Grande Rivière, Que.
St. Blaise, Que.	Horseshoe Cove, N.S.
Rimouski, Que.	Skinner's Cove, N.S.
Gaspereaux, P.E.I.	Digby, N.S.
Cape Croker, Ont.	Campbell's Cove, P.E.I.
Huntsville, Ont.	Aspy Bay, Dingwall, N.S.
Brockville, Ont.	St. Anne's Beach, N.S.
Chantry Island, Ont.	Cape John, N.S.
Parry Sound, Ont.	Beaudro's Landing, Ont.
Blind River, Ont.	Sober Island, N.S.
St. Anne, (Montmorency Co.) Que.	Kelly's Cove, N.S.
Somas River, B.C.	McKinnon's Point, N.S.
Trois Pistoles, Que.	Georgeville, N.S.
Point Edward, Ont.	Champlain, P.Q.
New Edinburgh, N.S.	River St. Francis, Que.
Ship Harbor, N.S.	Petit de Grat, N.S.
Gulliver's Cove, N.S.	Indian Brook Flats, N.S.
Sandy Cove, N.S.	Fort Lawrence, N.S.
Tiverton, N.S.	Serpentine River, B.C.
Westport, N.S.	Antigonish Harbour, N.S.
Tennycap, N.S.	Pugwash, N.S.
White's Cove, N.S.	Little Salmon River, N.B.
Necum Teuch, N.S.	Roman Valley River, N.S.
Presqu'île, Ont.	Pierreville, Que.
Freeport, N.S.	Bryson Bridge, Que.
Oromocto, N.B.	Oxtall River, B.C.
Petit Rocher, N.B.	Bayfield, Ont.
Orillia, Ont.	Cow Bay, N.S.
Georgian Bay, Ont.	Columbia River, B.C.
Kingsburg, N.S.	St. Jean Baptiste Bdge., Man.
Round Bay, N.S.	Echo Bay, Ont.
Donald's Head, N.S.	Tobermoray, Ont.
Neguac, N.B.	Christian Island, Ont.
Annapolis, N.S.	Repentigny, Que.
Charleville, N.S.	

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PROVINCE OF NOVA SCOTIA.

ABBOTT'S HARBOUR.

Abbott's Harbour, some 30 miles from Yarmouth, the county town, is situated on the west side and near the head of the peninsula forming the western side of Pubnico Harbour. It is about $2\frac{1}{2}$ miles to the south of Argyle Sound. The harbour is formed by a small island lying about 100 yards off the main land. The entrance to the harbour to the south is protected by the island and the main land, and the northern entrance is protected by a shingle beach, which under the action of northerly and north-westerly seas was liable to disappear and leave the harbour without protection. The harbour is the head-quarters of a numerous fishing fleet, and considerable quantities of cod, herring, lobsters and other fish are annually caught and exported.

In 1900-01, the department constructed a piece of cribwork beach protection, 235 feet long, 8 feet wide on top, 10 feet wide on bottom and 8 feet high. It is substantially built of round-log cribwork sheathed on the face with 5-inch sawed stuff, floored with 3-inch plank, well fendered and filled solid with stone ballast. It is admirably serving its purpose in protecting the beach from erosion.

During the fiscal year, 1901-02, the department expended the sum of \$1,225.76 in extending the beach protection work, built last year, by a new piece of cribwork 180 feet long, 10 feet wide on top, plumb on the seaward side and battering one in four on the inner or landward side. On the outer end, where the work is 14 feet high, is an ell 20 feet long and 10 feet wide on top. The remainder of the work is from 4 to 14 feet high. It is close-sheathed on the seaward side with 5-inch sawed spruce and covered on top with 3-inch plank.

Spring tides rise 12 feet, neaps 10 feet.

AMAGUADEES POND.

Amaguadees Pond, Cape Breton county, lies on the north side of East Bay, the eastern arm of the Great Bras d'Or lake, and is distant about 3 miles from Benacadie Point, at the entrance to, and 16 miles from the head of the bay,

It is a large sheet of water, about one mile in length and a quarter of a mile wide, with a depth of from 2 to 4 fathoms, separated from the bay by a sand and shingle beach of from 100 to 200 feet in width, and about 4 feet high above the summer level of the lake.

The sum of \$2,000.00 was voted for the construction of a wharf at this place, during 1901-1902. Instructions were received to carry on this work by day labour, but that if the cost of the wharf should exceed the amount voted, plan and specification for the construction of the proposed work were to be prepared and submitted.

As no survey had ever been made at this place with a view to the construction of a wharf, and as it was found impossible, owing to other pressing engagements, to obtain the necessary information, nothing has as yet been done in the matter.

ARGYLE SOUND.

Argyle Sound is situated on the west side of the head of the peninsula forming the western side of Pubnico harbour, some 30 miles south-east of Yarmouth, the county town.

In 1900-01, the sum of \$500.00 was expended in constructing a small wharf on the site of the old one. The new work consists of a block of substantially built cribwork,

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28 feet long, 11 feet wide, 6 feet high, well fendered, floored and ballasted. An approach was also built of granite boulders covered with gravel, 70 feet long, 25 to 28 feet wide and from 3 to 8 feet high.

In the present fiscal year the department expended the sum of \$519.67 in extending the little wharf built last year. The new work consists of two blocks of round-log cribwork stone-filled, 28 feet long, 11 feet wide in the length of the wharf, by 8 to 10 feet high. The blocks are connected to the shore block, built last year, with spans of 14 feet. The work, as now completed, consists of three blocks of cribwork, each 28 feet long, (across the wharf), by 11 feet wide and 8 to 11 feet high.

Spring tides rise 12 feet, neaps 10 feet.

BASS RIVER.

Bass River is a farming and manufacturing village of about 500 people, situated on the north side of Cobequid bay the eastern arm of the Bay of Fundy. It is half way between Truro and Parrsboro, or about 28 miles from either place. In 1894-95, the department built a public wharf of pile work, 210 feet long, 40 feet wide, with an ell at the outer end 55 feet long and 40 feet wide. At the outer end of the ell it was found necessary to build a small block of cribwork, containing 8,000 cubic feet, on account of the hard nature of the bottom preventing the piles from being driven to their proper depth. Along its outer face the work is 26 feet high, giving a depth of 22 feet at h. w.o.s.t.

In the present fiscal year the department expended the sum of \$1,099.11 in extending the pile wharf built in 1894-95. The extension is 40 feet square, substantially built of pile work and giving the wharf the form of a T. A small freight shed was also built on the wharf for the accommodation of local shippers and merchants.

Spring tides rise $50\frac{1}{2}$ feet, neaps $43\frac{1}{2}$ feet.

BEAR POINT.

Bear Point, Shelburne Co., is situated about five miles south west of Barrington Passage. It is a village of about 400 population. These people have been without proper wharfage facilities and in 1900-01 the sum of \$2,000 was appropriated for the purpose of constructing a wharf. The nearest wharf in this neighbourhood, previous to the present, was about five miles distant, and as the inhabitants are mostly fishermen, they required landing facilities for their boats and goods. The sum of \$1,845.60 was expended upon this wharf in 1901, and the work done is:- A stone-bank approach and a solid cribwork stem. The approach is 57 feet long, 24 feet wide on top and 9 feet high at the outer end. The stem consists of stone filled round-log cribwork, properly fendered stringered and capped, and is some 90 ft. in length. At the end of the fiscal year, 1900-01, the wharf was not completed, and during the past fiscal year the overplus of materials left over was disposed of to the breakwater, at Clarke's Harbour, and the work completed with the proceeds. This cribwork is 19 feet in width on top and has a depth at the outer end of 10 feet at l.w.o.s.t., or a total height of 19 feet. It was originally designed to be 100 feet in length, with an L or return of 20 by 10 feet at the outer end.

As the wharf is now it is practically sufficient for the needs of the place and should this village prosper, then the placing of an L or any other additional requirements could be considered.

Total expenditure to June 30, 1902, is \$1,989.44.

BEAR RIVER.

The village of Bear River, situated at the head of navigation, five miles above the two bridges, highway and railway, which are near the mouth of the river, is an important and prosperous settlement, partly in Annapolis and partly in Digby county, the

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river forming the boundary between the two counties. Large quantities of piles, cord-wood and lumber are annually shipped to South America, the West Indies and the United States, and the volume of shipping engaged may be judged by the fact that the bridges, in each of which is a swing span, are opened from 300 to 400 times in each year, for the passage of vessels.

In the present fiscal year, the sum of \$3,000.00 was expended in removing the upper portion of an old pier of the highway bridge, which was rebuilt by the provincial government, about 12 years ago, on a site about 100 feet farther up stream. This old pier bottom, which has been removed to a depth of 5 ft. below low water, spring tides, was so close to the channel that it was a source of great danger to vessels passing up and down. The dropping pier on the down stream side of the swing span of the highway bridge, was also rebuilt in substantial pile-work, the new pier being 180 feet long, 25 feet wide, and from 20 to 30 feet high, strongly built of pile-bents, well braced, fendered and bolted, provided with mooring posts and rings, and with three rows of hard-wood walings on the river face.

Of the total expenditure of \$3,000.00 the sum of \$349.17 was expended in the purchase of piles and timber for the rebuilding of the dropping pier on the upper side of the highway bridge.

BEAVER HARBOUR.

Beaver Harbour is situated sixty-five miles, in air line, east of Halifax. It has a farming and lumbering population of from 300 to 400 people.

In the present fiscal year the department expended the sum of \$2,097.46 in building a piece of cribwork for the preservation of a beach which protected the inner harbour from the inroads of the sea. The work, which is substantially built of round log cribwork, well fendered and filled with ballast, is 300 feet long, 8 feet wide and from 4 to 6 feet high.

BEAVER RIVER.

Beaver River is a prosperous fishing and farming village of some 400 people, situated on the coast of St. Mary's Bay, 13 miles north of Yarmouth, and on the county line between Digby and Yarmouth. The little stream of the same name which issues here, discharges through a gravel beach, which formerly, when the stream was low, obstructed its mouth and finally closed it altogether, so that the water has to find exit by soakage through the gravel.

In the year 1886-87, operations were begun by the department to improve the river mouth and to remedy this defect. A passage was cut through the gravel bank and sea wall, and a short breakwater was built on the south side of the mouth to catch the gravel and prevent the bank reforming; besides protecting the river mouth the breakwater forms a good though short loading pier for vessels during the summer months. This work proving satisfactory, the sum of \$1,500 was expended by the department in 1888-89, in further improvement. This consisted of extending the breakwater 100 feet, sheet-piling the northern face of the same, and extending the short pier on the northern side of the mouth.

In 1891-92, the rush of water during the freshets having begun to undermine the work, the sum of \$450 was expended in close-piling a portion of the river face, and in levelling up and repairing the top, which was leaning over the stream. In 1899-1900, the sum of \$732.35 was expended in rebuilding the whole top of the work for a height of from 3 to 5 feet. In 1900-01, an expenditure of \$1,080.04 was made in extending the breakwater, by the addition of a new block, 30 feet long, 25 feet wide and of an average height of 19 feet. The older portion of the work was also repaired.

During the present fiscal year the sum of \$2,097.46 was expended in further improvements and repairs. The work done consists of:—

(a) A new block on the outer end of the south breakwater, 50 feet long, 25 feet wide and from 16 to 17 feet high, founded on 24 piles driven to hard bottom and cut off

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a foot below the level of the beach. The block is built of round log crib-work, well fendered, ballasted and covered with 3" plank.

(b) A new block on the outer end of the north breakwater, 22 feet long, 18 feet wide and 14 feet high, substantially built of the usual type of round log cribwork.

(c) Minor repairs, chiefly under-pinning the shore end of the northern breakwater, where it had been slightly undermined, by unusually heavy freshets, in the brook, issuing alongside the work.

BIG BRAS D'OR.

Big Bras d'Or, Victoria county, is a settlement on the south side of the channel of the same name, near its entrance into the Atlantic Ocean.

With a view of enabling the residents of the locality to avail themselves of the advantages to be derived from the steamers which ply between the Sydneys and ports on the Bras d'Or Lakes, a wharf was constructed at Livingston's Cove, situated on the northern side of Boulardarie Island, four miles from its head and opposite Kelley's Cove, on the north side of the Big Bras d'Or channel, here a mile in width.

The wharf was completed in 1888-89. It is a block and span structure 150 feet in length and 20 feet in width, with an L at the outer end, 40 feet long and 20 feet wide, giving a length of 60 feet along the channel face, constructed entirely of native timber. The depth at low water at the outer end is 11 feet.

As it was found that the close-piling around the outer block had been completely destroyed by the teredo, below the line of low water, and that the covering was worn out and decayed, and that portions of the cap required renewal, during 1900-01, the sum of \$597.71 was expended in close-piling the outer face of the outer block, in placing double walings on the ends of block, and in renewing the covering and the cap-timbers on the outer block.

During the last fiscal year the sum of \$370.47 was expended in completing the repairs started in 1900-01. With this amount the ends of the outer block were close-piled, and the covering and cap-timbers on the approach were renewed.

Spring tides rise 2 feet.

BIG LORRAINE.

Big Lorraine, Cape Breton county, is a boat harbour on the Atlantic coast of Cape Breton Island, 3 miles to the eastward of Louisburg Harbour. The entrance is obstructed by a bar over which the minimum depth at extreme low water is $1\frac{1}{4}$ foot.

The amount appropriated for expenditure in 1901-02 was for improving the entrance by dredging a channel 850 feet in length, 40 feet in width and 6 feet in depth at extreme low water; but it was not expended, presumably on account of there not having been a dredge available.

BIG POND.

Big Pond, Cape Breton county, is on the south side of East Bay, an arm of the Great Bras d'Or lake, is about 13 miles from the head of the bay, and 25 miles from the town of Sidney.

Big Pond is so called on account of the existence here of a large sheet of water, separated from the bay by a beach.

During 1874-75, a cutting was made through the beach, from the bay into the pond and its sides protected with cribwork, but there being no large streams discharging into the pond, the slight rise and fall of the tide did not produce sufficient scour to keep the opening clear, and it soon filled up with sand.

A block and span wharf, 260 feet in length was constructed during 1887-88-89, but being built of native timber, in a few years it was destroyed by the teredo, the outer end was carried away by ice, and it was decided to abandon it.

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In 1899, a report was submitted on the construction of a new wharf; two sites were examined and estimates were attached for the cost of the wharf on each site.

The least amounts for which a suitable wharf could have been constructed, were \$2,600 and \$5,300, respectively, on sites No. 1 and 2. Site 1 was recommended as the most suitable because it was the better sheltered, and a wharf could be built on it, entirely with piling, whereas, a wharf on site No. 2 being much more exposed, would have to be constructed in a more substantial manner, and consequently be far more expensive.

Instructions were received to proceed with the construction of a wharf, by day labour for which the sum of \$2,500, was appropriated for expenditure during 1901-2, but no mention was made of the site, and at the end of the fiscal year, the matter was still in abeyance.

The total expenditure up to the end of the fiscal year, is \$5,088.33, divided as follows :—

On channel and protection.....	\$2,500.00
On wharf and repairs.....	2,088.33
	<hr/>
	\$5,088.33
	<hr/>

BLACK ROCK.

Black Rock, Victoria county, is a small fishing station on that portion of the north-eastern coast of Cape Breton island, locally known as 'The North Shore,' and is about midway between the harbours of St. Anne's and Ingonish.

During the year 1899-1900, the sum of \$500 was expended in reconstructing and protecting a road, leading from the landing place on the beach to the top of the clay bank. The road was reconstructed for the convenience of the fishermen, whose fish-houses are on the top of the bank, and to give them a place on which to haul their boats during stormy weather.

The new road is 8 feet wide, benched in the face of the bank, and rises from 5 feet above high water, at the beach, to the top of the bank, which is 75 feet above high water, in a distance of about 300 feet. The lower end of the road was protected by a stone retaining wall, for a distance of 25 feet.

During the heavy gales in the autumn of 1900, the stone retaining wall was broken up by the sea, and during the last fiscal year, a sum of \$249.98 was expended in replacing the stone retaining wall at the lower end of road, by a low cribwork block, 40 by 15 feet, and the road itself was improved and repaired where necessary.

BLANCHE.

This is a small fishing settlement about 18 miles south of the town of Shelburne. The only harbour or shelter for fishing boats in this neighbourhood, is a small tidal pond, nearly dry at l.w.o.s.t., with a narrow exposed channel leading into it and an area at h.w.-o.s.t., of two or three acres. The sides of the entrance to the channel being composed of fine gravel which constantly shifted under the action of the waves, rendered it necessary, for the permanence of the harbour, to protect it and in 1892 the Department built a groin 72 feet long on its eastern side, in order to prevent this. The work is built of round log, open face cribwork 8 feet wide on top, battering on the sides one in four and is about six feet high. It is fully ballasted and covered on the top with six-inch plank spars. The total cost was \$599.99.

During the past few years the gravel has been gradually working around the end and over the top thus filling up the channel. In order to prevent this, the work which in the first place was not built high enough, had to be raised from two to three feet, and an extension 40 feet in length had to be constructed.

During the past fiscal year the sum of \$475.60, was expended in raising for a distance of 50 feet, the old work from one to three feet. The new work which joined on

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the old was 41 feet in length, 8 feet wide on top and 13 feet high at the outside end. It was ballasted to the top with good hand-picked stone ballast, and was built of continuous round log cribwork. The work was well and substantially performed.

BOULARDERIE CENTRE.

Boularderie Centre, Victoria county, is on the southern side of the Great Bras d'Or channel, about 8 miles to the westward of its entrance into the Atlantic ocean, and 10 miles to the eastward of its entrance into the Little Bras d'Or lake.

On April 25, 1901, a contract was entered into for the construction of a wharf, the work under contract being 164 feet in length and 20 feet in width, and consisting of an approach of stone, clay and gravel, 10 feet long; of a cribwork abutment 30 feet in length; of two cribwork blocks 20 by 20 feet, and of an outer block 24 by 40 feet, with 20 feet openings between the blocks, spanned and covered over. The abutment and the blocks, constructed of round timber, laid open-faced are creosoted up to high water, protected all around with fenders, and the faces of the two outer blocks, with close-sheathing.

The work was commenced early in the month of March, 1902, and it was brought to a satisfactory completion on June 30.

The depth at extreme low water along the channel face is 13 feet; spring tides rise 2 feet.

The total expenditure on this work is \$3,194.49.

BROOKLYN.

Brooklyn or Herring Cove, as it was formerly called, is situate on the eastern side of Liverpool Bay at about half a mile outside of the bar of Liverpool harbour. Owing to the existence of this bar and the contracted shape of the harbour, this cove has been the only safe anchorage in the bay. In 1879 the department constructed a breakwater which cost \$68,412.47, but for the last eight or nine years has been of no practical utility. Owing to the prevalence of the teredo the logs of the cribwork have been eaten away and the entire structure became demolished or practically so, and the stone ballast emptying into the harbour rendered the old work a menace to navigation rather than a protection. About a $\frac{1}{4}$ -mile to the eastward of this breakwater lies a cove at the mouth of which, prior to Confederation, the government of Nova Scotia had constructed a wharf which also had fallen into a state of decay.

In the year 1899-1900 this department began the construction of a new wharf upon the same site, the work was not completed and only \$1,836.47 was expended. During the fiscal year 1901 the sum of \$649.38 was expended in completing this work, making total outlay thereon \$2,485.85; the approach was renewed and raised 3 feet; the old work, consisting of 159 feet in length of solid continuous cribwork, was rebuilt for the top height of 6 feet and 32 feet in width.

During the last year this work was extended 50 feet in length with a width of 32 feet and a height of 23 feet at the outside end. The new extension is constructed of pile trestle bents situate 10 feet apart centre to centre, well fendered, braced and waled besides being close-piled along its head and outside. The materials used were excellent, the work good and the whole structure is substantial and strongly constructed. The traffic at this wharf has increased very much since it has been reconstructed.

BURLINGTON.

Burlington, with a population of about 350 people, is a farming settlement five miles north of the county town of Windsor, on the right bank of the mouth of the Kennebec river. During the year the department expended the sum of \$3,499.99 in the construction of a public wharf for general shipping purposes. The work, which is built of block and span is 222 feet long and 25 feet wide. In the whole work there are 9

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blocks, from 11 to 20 feet in length of wharf and from 5 to 27 feet in height. The spans, which have a uniform length of 13 feet, are 8 in number. The outer end of the work, which, including the L, has a face length of 59 feet, is 25 feet high and at h.w. o.s.t. has a depth of 23 feet of water.

Spring tides rise 40 feet, neaps 36 feet.

The approach will be completed under the 1902-03 appropriation.

CAPE COVE.

Cape Cove or Cape St. Mary, Digby county, is situated on the east coast of the mouth of the Bay of Fundy, near the entrance of St. Mary's Bay. It is 19 miles north of Yarmouth and 27 south of Weymouth. It has a population of about 150 people, engaged chiefly in fishing; it is one of the best fishing stations on the coast of St. Mary's Bay, cod, haddock and herring being caught in abundance.

A breakwater for the protection of the fishing fleet was begun about the year 1840, and built in sections by the inhabitants, aided from time to time, by small grants, amounting in all to \$1,200, from the provincial government. In 1881-3 the department expended \$4,499.47 in making extensive repairs and renewals, part of the work under these appropriations being the construction of a buttress built of round log cribwork, 50 feet long and 15 feet wide to support the middle of the southern face of the work. The work is 300 feet long, 25 feet wide, on top, and 24 feet high at the outer end. In 1900-01, the sum of \$750.99 was expended in rebuilding a gap in the middle of the work made by the storm of March 1, 1900.

During the present fiscal year, the sum of \$3,999.97 was expended in building a new block in the extension of the old breakwater, 30 feet long by 34 feet wide, and in building a re-enforcing block in the western or seaward side 121 feet long, 10 feet wide and from 17 to 24 feet high. The outer new block is from 24 to 26 feet high. A new top was also built on the old work for the whole of the 121 feet widened by the new block.

Spring tides rise 18 feet, neaps about 15 feet.

CANADA CREEK.

Canada Creek, also called Black Rock, King's county, is a small fishing and farming village of about 150 people, on the south shore of the Bay of Fundy, 60 miles east of Digby Gut, and 8 miles west of Hall's Harbour. The harbour is formed by two piers or breakwaters, built one on either side of a small stream. That on the east side, which is entirely detached from the shore, serves merely as a breakwater, and was built by the department in 1878-9. It is 150 feet long, 25 feet wide on top, and from 12 to 15 feet high, substantially built of round log cribwork, close-faced, well ballasted and fendered. The breakwater on the west side, originally 248 feet long, which serves both as a breakwater and a landing pier, was built before Confederation at the joint expense of the inhabitants and the provincial government. It is built of round log cribwork, the seaward side being protected by close sheathing of flatted spars. In 1874 it was extensively repaired. In 1884 further repairs were made, and a new block 57 feet long by 10 wide was built on the seaward side of the shore end. In the winter of 1889-90 the outer 100 feet in length was completely wrecked and other minor damage caused by severe gales. The shortening of the structure caused the gravel to wash around its end and fill up the berth for vessels in the bed of the stream along its eastern side. In 1892-3 the department built a new block of cribwork on the outer end of the old work, 50 feet long, 14 ft wide on the top and from 8 to 11 feet high between the outer end of the existing work and the remains of the old. The block was totally destroyed in November, 1899.

In 1900-01 an expenditure of \$1,928.09 was made in repairing the work and in building a new block 34 feet long, 30 feet wide, and at the outer end 28 feet in extreme height.

During the present fiscal year the sum of \$1,205.91 was expended in completing the new block in extension of the main breakwater begun the previous year, and taking

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down and rebuilding a length of 60 feet of the retaining wall on the east side of the mouth of the creek, this piece of work being of an average height of 10 feet and width of about 12 feet.

CAPE AUGET.

Cape Auget, Richmond county, is the southern promontory of Madame Island, and separates the harbour of Arichat from Petit de Grat Inlet and forms the south-eastern side of Arichat Harbour.

The sum of \$500 was voted for expenditure during 1901-02 for a boat harbour at Herbine's Cove, on the north-western side of the cape, and about one mile to the eastward of Marache Point, on the east side of the southern entrance into Arichat Harbour.

The cove is from 100 to 150 feet in width, and about 600 feet in length (at high water) and is formed by an outlying island, connected on its southern end with the mainland by a narrow gravel and shingle beach. The entrance is from the north-east through a narrow channel obstructed by a bar, nearly dry at low water.

The sum of \$495.67 was expended in the construction of a small breakwater, 40 feet long, 16 feet wide and extending out to low water on the western side of the entrance to the cove, and in improving by hand dredging the channel leading into it.

CAPE NEGRO ISLAND.

Cape Negro Island is situate about midway between Shelburne Harbour and Cape Sable Island. It is two and one-half miles in extreme length and divided into two sections of nearly equal size by a narrow stretch of shingle and gravel which is dry at all tides. This stretch of gravel forms a natural breakwater to the small harbour lying on its north side. The southern side of the beach is at all times exposed to heavy seas and from continually wearing away, gradually allowing the tide, about the year 1885, to ebb and flow over it. The local government in the year 1886 built a piece of beach protection 100 feet in length over the lowest part of the beach. This not proving sufficient this department in 1889-90 extended and repaired the old work. The extension is 189 feet in length, 12 feet wide on the top and of an average height of 3 feet 9 inches. It is built of round log cribwork with cross-ties every 10 feet and continuous ballast floor on the bottom course of longitudinals and is filled to the top with heavy stone ballast. Communication with the mainland is maintained by small boats, the landing place on the island being situate on the extreme northern point of its north-eastern part. As the landing place is on a straight open beach and fully exposed to gales from the east and south-east it was protected many years ago by a block of cribwork. In 1892, this work being very much decayed and out of repair, was rebuilt by the department at a cost of \$300. This work was rebuilt directly upon the site of the old work, and was 80 feet in length, 6 feet wide on top and about 9 feet high. It was built of round log open cribwork well ballasted and riprapped on the lee-ward side, and the landing was skidded with round spars forming a sort of launchway 16 feet in width. During the storms of the winter of 1900 the work was slightly damaged and it was found not to be of sufficient length, as the launchway was filled up with stones which were swept around its outside end. In order to heighten it and extend it the sum of \$271.69 was expended in 1901 and \$228.24 in the last fiscal year. The extension is 40 feet in length, 11 feet in height and 10 feet wide on top, whilst the old work for a distance of 50 feet was raised from 1 to 3 feet. The work was well and cheaply done.

CAREY'S PASSAGE.

Carey's Passage, Richmond county, is situated on the northern side of the western entrance into Lennox Passage, and connects it with the Basin of River Inhabitants.

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Owing to the existence of a gravel beach across the channel, near its entrance into the Basin, fishing boats were only enabled to use the passage during high water, in consequence the fishermen lost much time and suffered many inconveniences.

During the fiscal year ended June 30, 1902, out of the amount voted for rendering the passage available for boats at all times of tide, the sum of \$807.04 was expended in cutting a channel through the beach and deepening the old channel, for a distance of 400 feet, to a depth of 6 feet, below high water, to a width of 16 feet, and in the construction of a cribwork channel protection work 80 feet long and 10 feet wide, on the eastern side of the cut through the beach.

Spring tides rise 6 feet.

CARIBOU ISLAND.

Caribou Island, Pictou county, is on the Northumberland Strait, 5 miles to the westward of the entrance to Pictou Harbour.

Caribou Harbour, sheltered by Caribou Island, and a smaller island lying to the eastward of it, is an extensive place 6 miles in length and one mile in width, but the water is shallow.

The principal entrance, between the two islands, has a depth of only 4 feet at extreme low water, and the flats between the mainland and the western extremity of Caribou Island are dry at extreme low water, except in a few small channels.

A causeway of brush and stone 1,330 feet in length and 18 feet in width on top, between the mainland and the western extremity of the island, commenced in 1890-91 was, after the completion of the work undertaken in 1894-95, built up to the level of ordinary high water over 560 feet of its length, and about $1\frac{1}{2}$ feet below that level over the remaining 770 feet. In 1897 a breach was made through the work near its western extremity, where the bottom was scoured to a depth of about 4 feet at low water, and the top of the low portion, 560 to 1,300 feet from the west end, was disturbed in places, particularly at a point 600 to 670 feet from the west end where it was carried away to within $1\frac{1}{2}$ feet of low water. In 1900-01, the breaches in the brush and stone works were filled in and the work raised to about the level of ordinary high water.

Spring tides rise 6 feet, neaps 4 feet.

During the fiscal year 1901-02, the sum of \$256.25 was expended in continuing the raising of the brush and stone work.

CHEBOGUE HARBOUR.

Chebogue Harbour, Yarmouth county, is situated about 7 miles south of the town of Yarmouth. Near its mouth, and surrounded by Fox Island, Beal Island, Jacko Island and Shortliff Point, is a small but well sheltered anchorage or roadstead, which offers shelter to a considerable number of fishing boats and other small craft engaged in fishing and general trade. The anchorage is partly protected from the south by Fox Island, but its western portion, which is mainly dry at low water and much used at or near high water by boats plying between Chebogue Point and other ports, and by other craft, is guarded by a gravel bar or beach. The beach is some 800 feet long, about 20 feet wide from high water to high water and 4 to 5 feet above h.w.o.s.t. To preserve the beach, and the anchorage north of it, the department in 1900-01, built 300 feet in length of beach protection work. The cribwork is $8\frac{1}{2}$ feet high, 8 feet wide on top, plumb on the beach or shoreward side, battering 1 in 4 on the back or harbour side, and substantially built of round logs, well bolted, fendered and filled with ballast.

During the present fiscal year, the sum of \$1,311.79 was expended in extending the beach protection work built last year. The extension is 243 feet long, $9\frac{1}{2}$ feet in mean width, $8\frac{1}{2}$ feet high, strongly built of round log cribwork, well fendered, filled with ballast and covered with 3-in. plank. The whole work, which is doing excellent service in the protection of the roadstead is now 603 feet in total length.

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CHETICAMP POINT.

Cheticamp Point, Inverness County, is at the southern extremity of Cheticamp Island, about one mile to the eastward of a beach of shingle closing the south end of Cheticamp Harbour, which lies between the island and the mainland, and is entered from the north.

The amount appropriated for expenditure in 1901-02 (part of amount required for the construction of a proposed breakwater 370 feet in length) was not expended.

CHEVERIE.

The village of Cheverie, with a population of about 350, is situated on the right or east bank of the estuary of the River Avon, where it debouches into the basin of Mines, some fifteen miles north of Windsor the county town. It is a good farming district, but the principal trade of the place is in the quarrying and shipment of gypsum to the United States. The quantity which varies according to the prices ruling in the American market, ranges from 20,000 to 60,000 tons per annum.

A wharf about 100 feet long was built here many years ago by the Provincial Government. In 1873-74 the department of Public Works lengthened it 70 feet at a cost of \$2,338.88, this extension being of open round log cribwork like the old work. In 1882 a further extension of 182 feet was built at a cost of \$5,000.00. In 1885 the sum of \$600 was expended in effecting some much needed repairs to the shoreward side of the wharf. In 1884 the department built a detached breakwater 300 feet distant from the outer end of the wharf. This piece of work consists of solid cribwork 130 feet long, 20 feet wide on top, 35 feet wide at base, and about 23 feet high, built of square timber and close faced on all sides. The seaward side to a height of 10 feet below high water of spring tides has a slope of one to one, the sloping faces being covered with 6-inch plank. In 1887-88 the sum of \$500 and in 1896-97 the sum of \$100 were expended in general repairs to the wharf. In the fiscal year 1899-1900 the sum of \$903.27 was expended in extensive repairs.

In the fiscal year ending June 30, 1902, the sum of \$768.23 was expended in the purchase of timber for the extension of the detached breakwater built in 1884 as described above.

CHIPMAN BROOK.

The harbour at Chipman Brook, King's county, is formed by the mouth of a small stream which issues on the south shore of the Bay of Fundy, half way between Hall's harbour and Canada Creek or about three miles from each place.

About the year 1857 a public wharf 175 feet long and 25 feet wide was built at the joint expense of the inhabitants and the provincial government.

Since the Public Works Department has had charge and control of this work numerous expenditures have been made in repairs and renewals.

In 1899-1900 the sum of \$1,000 and in 1900-01, a further sum of \$1,485.47 were expended in extensive renewals and repairs.

Spring tides rise about 38 feet.

During the present fiscal year the department expended the sum of \$1,422.47 in extending the breakwater by a block 50 feet long, 30 feet wide and from 18 to 20½ feet high, strongly built of round log cribwork, filled solid with ballast, close-sheathed on the seaward side and outer end and provided with a break on the seaward side, 5 feet high.

CLARKE'S HARBOUR.

Clarke's Harbour is a town of about 1,500 people situate on the south-west side of Cape Sable Island and considered the second most important fishing town in Nova

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Scotia, the total value of the fisheries during the last year being in the vicinity of \$500,000. During the summer season there are two and the winter one steamer plying between this place and Yarmouth, calling at intermediate points, whilst there are owned in the place from 15 to 20 schooners ranging from 8 to 115 tons burthen with a supplementary fleet of over 250 small boats ranging from $\frac{1}{2}$ to 8 tons. The depth of water at l.w.o.s.t. at the head of the wharfs in this harbour is from 7 to 9 feet. During the fiscal year 1899-1900 the department commenced the construction of a breakwater and during the last fiscal year the sum of \$6,685.93 was expended in completing the structure. Besides this expenditure the sum of \$456 was expended in removing rocks from the channel of this harbour. The work is complete and as it now stands is 770 feet in length consisting of a stone bank 460 feet in length and a continuous cribwork 310 feet in length. The stone bank is 16 feet wide on top with a slope of 1 to 1 on the inside and 1 to 2 on the outside and a height of 18 feet at the outer end. The cribwork is 14 feet wide on top and on the bottom varies in width from 23 to 25 feet. It is 23 feet high at the outer end. The cribwork is built of continuous round log, stone filled cribwork ballasted and fendered, whilst the outside and end are sheathed with 7 inch logs hewed on top and bottom for the entire height of the work. It gives good shelter to the boat anchorage and beyond slight repairs which will inevitably be necessary to the rock work will require but slight attention in future.

CLEMENTSPORT.

Clementsport, Annapolis county, is a village of about one thousand people, situated near the mouth of the Moose River, which enters the Annapolis Basin 8 miles south-west of Annapolis, and 12 miles north-east of Digby.

In 1900-1 the department expended the sum of \$500.05 in widening, straightening and deepening by hand digging the vessel channel in the tidal mouth of the river. The excavation extends below the railway bridge, the material removed consisting of gravel and mud. The additional width given to the channel is from 10 to 25 feet, the additional depth being from 1 to 2 feet; the channel was also straightened by cutting off several projecting points.

During the present fiscal year the sum of \$1,000 was expended in lengthening and widening the channel formed the previous year. The cutting aggregating 1,100 feet in length from 18 to 40 feet in width and from $1\frac{1}{2}$ to 4 feet in depth. The work is a great benefit to the shipping of the port. It was all done by hand at low tide.

Spring tides rise about 25 feet.

COFFIN'S ISLAND.

Coffin's Island is situated on the north-east side of the mouth of Liverpool Bay, its nearest point being about $\frac{3}{4}$ of a mile from the mainland. The island, which at no point is more than 15 or 20 feet above high water, lies north and south, its length being about a mile and its width about $\frac{1}{3}$ of a mile. The southern half is thickly wooded with a small growth of spruce and fir whilst the northern half consists of shingle beaches. On the extreme south point is a lighthouse, exhibiting a revolving white light at an elevation of 65 feet above high water. On the eastern side at about the middle of its length is a sort of lagoon or boat harbour protected by the shingle beaches and forming a valuable and much frequented harbour of refuge for a numerous fleet of fishing boats. On the shingle beach at the mouth of the little harbour, on which large quantities of fish are dried in season, is a fishery establishment comprising two small landing wharfs and several sheds for storing, curing and packing fish.

In 1882-83 the sum of \$2,099.95 was expended in building a spur breakwater in a north-westerly direction from the most westerly point of the island, with the object of protecting the western side of the boat harbour. This work was built of rough stones and boulders of as large size as could be handled with the appliances available. It was 250 feet in length. Its top was 10 feet wide and its height 4 feet above high water

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O. S. T. (Spring tides rising here $7\frac{1}{2}$ feet and neap $5\frac{3}{4}$ feet). Its height at the outer end was about 9 feet, the inner face having a slope of about $\frac{1}{2}$ to 1. In 1883-84 the sum of \$2,890.19 was expended in building a piece of substantial stone-filled cribwork, 300 feet long, 12 feet wide and 7 feet high for the protection of a low place in the shingle beach on the east side of the island at a point that was gradually being wasted away by the waves to the peril of the boat harbour. This piece of work has done its duty most satisfactorily having constituted a nucleus for the accumulation, almost to its top, of gravel that prior to its construction was being carried by the wash of the sea, through the breach in the beach, into the boat harbour. In 1884-85 the stone spur breakwater on the west side of the island having proved quite useless for the purpose for which it was built, the sum of \$994.70 was expended in building a piece of stone-filled cribwork to fill a break made in the beach immediately to the northward of the spur. This piece of work is 200 feet long, 12 feet wide and from 5 to 7 feet high. It has done good service as far as it goes but further extension to this protection was considered necessary and in the year 1898-99 the sum of \$939.62 was expended in constructing a further extension of 120 feet with a width of 10 feet on top and an average height of $6\frac{1}{2}$ feet besides effecting considerable repairs to the old work.

During the last fiscal year the sum of \$992.98 was expended in constructing a still further extension. The work was extended a distance of 60 feet on the western end and 90 feet on the eastern end. It was 8 feet wide on top with more batter than the other parts of the work, giving it a bottom width of 14 to 16 feet and had an average height of 10 feet. The old spur breakwater was almost completely demolished by using the stones for the ballasting of the new work. This old spur was the cause of many of the breaches in the beach and now with it out of the way this work should stand for many years, although the older parts of the work will probably require some repairs in the near future, but its present condition is very good.

COMEAU'S.

Comeau's, or Comeau's Brook, is the name of a portion of that continuously settled district on the shore of St. Mary's bay, between Yarmouth and Weymouth. It is one mile north of Saulnierville, about 6 miles north from Meteghan river. Many years ago, a breakwater had been constructed, probably by private parties, but it was very inadequate and had been allowed to go to decay. During the year the department expended the sum of \$997.31 in repairs and renewals. The shoreward end of the old breakwater was rebuilt a length of 60 feet by 24 feet wide, by 10 to 12 feet high, substantially built of round log cribwork, well sheathed, fendered, ballasted and bolted and with a break 4 feet high.

COMEAU'S HILL.

Comeau's Hill, Yarmouth county, is the name of a straggling settlement of some two or three hundred people, situated on the west side and close to the extremity of the peninsula between Chebogue harbour and Goose bay, about fifteen miles south-south-west from Yarmouth, the county town. It is conveniently situated as regards the fishing industry of a considerable district, and is the headquarters of a fleet of some 30 or 40 boats.

In 1900-01, the department built a breakwater 135 feet long, 16 to 20 feet wide on top and 12 feet high at the outer end. The whole work is constructed of granite boulders, the inner or harbour face being of split boulders, laid with a smooth battered face of about 1 in 12, the outer or seaward face of round and irregular shaped rocks with a slope of $1\frac{1}{2}$ or 2 to 1. The work, so far as it goes, answers its purpose admirably, and is a permanent and satisfactory job.

During the present fiscal year, the department expended the sum of \$1,494.99 in extending the work by a further length of 100 feet of stone breakwater.

The breakwater is now 250 feet long, from 17 to 21 feet in width, and from 6 to 14 feet in height.

Spring tides rise 12 feet, neaps 10 feet.

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. COMEAUVILLE.

Comeauville is a straggling settlement of some 200 or 300 people, engaged in fishing and farming, situated on the eastern shore of the Bay of Fundy, 35 miles southwest of Digby, the county town.

The wharf, which was built many years before Confederation, was partially or wholly destroyed about 1878, and abandoned by the department. During the next 10 or 15 years it was partially repaired by private parties. It appears that at the time that it was destroyed the inhabitants petitioned for a grant of \$4,000 to \$5,000, for the purpose of restoring the work, and the money was voted. Before work was begun, however, Mr. Campbell, then Federal member for the county, died, and the money was diverted to repairing the wharf at Little Brook, which the inhabitants seem to have called 'Comeauville' or 'Comeau's' for the purpose of deceiving the department and securing the appropriation; the departmental reports show expenditures at 'Comeauville' of \$3,135.56 in 1887-88, but it is probable that these amounts were really spent at Little Brook. In 1900-01 the sum of \$4,346.02 was expended in the renewal, repair and improvement of the work.

In the present fiscal year the sum of \$2,000 was expended in restoring the shoreward portion of the breakwater of which the outer end was built last year. The new work is 238 feet long, 25 feet wide by 14 to 19 feet high, thoroughly well built of round log crib-work, filled with ballast and well fendered and bolted.

COW BAY (PORT MORIEN)

Cow Bay (Port Morien), Cape Breton county, is on the eastern coast of Cape Breton Island, about 18 miles to the eastward of the entrance to Sydney Harbour.

A breakwater built by the owners of the Gowrie Coal Mine on the north side of the bay, came under the charge of the department in 1873. It originally extended 1,374 feet at low, or to 23 feet at high water, and was about 44 feet in width. The area of the basin inclosed between it and the shipping pier of the Gowrie Mines, now the property of the Dominion Coal Co., was 17 acres, 10 acres of which had a depth of from 9 to 17 feet at low water.

The breakwater was seriously damaged during the great gale of August 24, 1873. Extensive repairs and improvements were made nearly every year up to 1895, when it consisted of 220 feet of old work protected on the seaward side by a beach of shingle and boulders; 360 feet of old work 44 feet in width with a new inner face work and a break on the seaward side built over the remains of the old work; and 793 feet of inner work with counterforts and connecting outer face works. The inner and outer face works were from 30 to 20 feet apart; they were connected by tiwalls and the spaces were filled with earth and stone ballast.

In 1895 and 1896, 260 feet of breakwater (1,114 feet from the shore end outwards) was carried away down to from 2 to 6½ feet below low water; the outer face works from 1,114 feet from the shore end inwards were badly damaged; and ballast was washed over the works and deposited in the dock along the inner face from 581 feet to 1,114 feet from the shore end.

Between the years 1897 and 1901 a large amount was expended in repairing and strengthening the breakwater from 1,114 feet from the shore end inwards. The outer works were repaired and strengthened by filling in the face chambers to about half tide level with concrete and by close-piling; the stringers and covering of the inner work from 581 feet to 1,114 feet from the shore end were renewed; and the work of placing a talus of concrete blocks on the seaward side was commenced.

Since the suspension of operations in June, 1901, the breakwater has sustained further and serious damage.

The total expenditure to June 30, 1901, including \$25,000, for purchase of breakwater, is \$221,610.56.

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CRIBBIN'S POINT.

Cribbin's Point, Antigonish county, is on the west side of St. George's Bay, 8 miles to the southward of Cape George, and 5 miles to the northward of the entrance to Antigonish Harbour.

The wharf, completed in 1892-93, extending 300 feet in a southerly direction from the point, has an approach 195 feet in length. It is 20 feet in width, for a distance of 120 feet from the inner end, and 30 feet for the remaining 180 feet; the inner 50 feet being of stone, and the outer 250 feet of closed-faced timber work fully ballasted.

The face timbers having become weakened by the ravages of the teredo, during the years 1896-97-98-99, the outer end, the seaward face for a distance of 20 feet, and the inside face for a distance of 10 feet, were close-piled with creosoted timber piling; a talus of quarried stone was placed on the seaward side over a distance of 180 feet from the outer end; the work was reballasted where necessary and a timber 'break' 100 feet in length and $2\frac{1}{2}$ feet in height, above the cap timber, was constructed on the seaward side of the inner end of the wharf to prevent the sand from washing on to the work.

A sum of \$1,000 was appropriated for expenditure during 1899-1900 toward the construction of an extension, and the amount was expended in obtaining a portion of the creosoted timber required for the substructure of the proposed work.

During the year 1900-01 the sum of \$3,079.98 was expended in procuring the balance of the timber required for the extension, and in repairing the outer end of the old work, which was almost destroyed during the severe gales in the autumn of 1900. The repairs consisted in the reconstruction of the top of the outer end of the wharf for a distance of 66 feet, to an average depth of 8 feet, and in placing heavy quarried stone in the talus on the seaward side of the reconstructed work.

As the sand at the end of the wharf, at which originally there were 11 feet of water, at low water, had made up to a height of about 6 feet, since its completion, it was deemed advisable to found the extension on the original bottom, and for that purpose the dredge *George McKenzie* was engaged from May 30 to July 12 in dredging out the foundation of the new work and the approaches thereto, at a cost of \$1,604.44.

The total amount expended during the year 1901-02 is \$3,122.99 exclusive of dredging and the extension was completed in accordance with plan and specification.

The block is 48 feet long and 20 feet wide on top with outer faces sloping 1 in 10, and is placed across the end of the wharf, forming an L 18 feet long. It is of an average height of 20 feet, laid open faced, with creosoted timber substructure, close-sheathed, in all outer faces, and filled in solidly with ballast.

Spring tides rise 4 feet.

DELAP'S COVE.

Delap's Cove, Annapolis county, is situated on the south shore of the Bay of Fundy, 12 miles to the eastward of Digby gut.

The breakwater is constructed immediately to the eastward of the mouth of a small pond, which affords safe shelter for fishing boats, and a convenient place for keeping small vessels during the stormy winter months. The breakwater itself affords a good landing place for coasters and small schooners, the pier breaking off all easterly storms and the formation of the coast on the opposite side of the stream forming a natural western breakwater.

This breakwater was built by the department in 1878-79. It is 156 feet long, 25 feet 3 inches wide, and is constructed of round timber, with square timber faces, its easterly side being sheathed with 8-inch timber. It is provided with a 'break' 4 feet 6 inches high, along its seaward (easterly) side, and its covering is of 6 inch plank.

In 1885, the sum of \$50 was expended in repairing the foundation of the seaward face, and depositing large stones along it, to prevent the gravel from washing away.

In 1899-1900, the sum of \$1,000 was expended in protecting the entrance to the pond and in placing an anchor and buoy off the outer end of the pier to enable vessels to warp out and proceed to sea, avoiding the danger of going ashore on the western headland, to which they were formerly exposed.

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The opening into the pond was protected by extending the western face of the pier inwards 100 feet along the margin of the stream, or to where this latter opens into the pond, and in raising the beach on the seaward side of the pier to prevent the stone and gravel from being thrown over the sea wall. The wharfing along the stream is of an average height of about 16 feet, and 12 feet wide, and the entrance to the pond is now clear and unobstructed.

The warping anchor is a large rock, placed in position and fitted with proper chains and tackles. During the summer months it has a spar buoy attached, which is removed in winter, to avoid danger of drifting ice.

During the year 1901-2 the sum of \$400 was expended in repairs to the break-water. The work done consists of the renewal of the greater portion of the covering, 200 feet of new stringers, 9 new mooring posts, 13 fenders, 118 feet of guard timbers, 200 tons ballast, besides petty and miscellaneous repairs to the 'break' and the outer end of the work.

DIGBY.

Digby, the capital of the county of Digby, with a population of about 1,500, is beautifully situated on the south-western end of the Annapolis basin. It is an important station on the Dominion Atlantic Railway, 67 miles north of Yarmouth, 150 miles from Halifax, 20 miles from Annapolis, and is also a port of call for the daily steamer of the Dominion Atlantic Railway plying between Digby and St. John. The harbour is open at all seasons, and well protected from nearly all quarters; storms, however, from the north and north-east, drive a heavy sea against the pier, and if at such times there be much drift ice in the Basin, the structure is likely to suffer damage.

The first pier was built by the government of Nova Scotia, some years before Confederation, and was destroyed by the gales which swept the Bay of Fundy in 1866-7. In 1869, to aid in rebuilding the work, the sum of \$2,920 was granted by parliament and transferred to be expended by the provincial government. The pier, as then built, was of pile-bents 12 feet apart for 560 feet, next a block of cribwork 80 feet long, 45 feet wide, the southern half of which sloped so as to form an incline, rendered necessary by the great rise and fall of the tide (24 feet at springs). This incline was finished by a block 170 feet long by 22 feet wide, the northern half of this portion of the pier being all of pile-bents, 8 feet apart. The outer end of the pier consisted of a block 56 feet long, 45 feet wide and about 40 feet high. The whole of the northern face was close-piled, the total length of the structure being 870 feet.

In 1872, the sum of \$1,650 was expended by the department in completing and repairing the pier. In 1874, a number of piles and braces were renewed and other works done. During the gale of February 22, 1879, a schooner loaded with produce for the West Indies, parted her cable and was swept bodily through the pier, carrying away a length of 130 feet, which was rebuilt.

In 1881-2, the sum of \$888.57 was expended in renewing a few piles and other timbers that had been eaten away by the limnoria.

In December, 1885, the outer end of the pier was destroyed by a severe gale, and in 1885-6, the sum of \$1,945.62 was expended in repairs.

In 1886-7 a further amount of \$767.62 was spent on the same repairs.

In 1887-8, the sum of \$7,467.68 was expended in the construction of a block 40 x 40 feet on the site of the displaced outer block, of an inclined landing 26 feet wide and 80 feet long between the new outer block and the undestroyed inner portion of the pier, and the building of a roadway on pile and frame-bents, connecting the whole work with the new outer block. In January, 1888, operations were begun towards building the pier to its original length.

The new work consisted of a block of 45 x 45 feet to replace the former one. It is built of round timber with double sets of face-logs, and is fully ballasted; it is 45 feet high, and connected with the older portions of the pier by a crib-work inclined landing, over the top of which a deck wharf is carried on heavy framed bents. The inclined landing and its superstructure is 25 feet wide. The inshore or pile-work section was

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strengthened and repaired in places, and parts of the worn and decayed plank covering were renewed. In 1889-90, heavy piles were driven along both the northern and southern sides of the centre block.

In 1890-91, and again in 1891-92, small expenditures were made in general repairs.

In 1890, a contract was entered into for the construction of a landing pier on a new site, viz.: on the north side of the 'Racquet,' about a mile to the northward of the present pier and the town of Digby. For this purpose a quantity of timber and iron had been procured by the contractor.

Owing, however, to numerous delays and the death of the contractor, the intention of building this new pier was abandoned, and it was decided instead to repair and reconstruct the present pier, utilizing, as much as possible, the timber and iron belonging to the estate of the deceased contractor. The works of reconstruction were carried out by day labour. In April, 1894, a length of 330 feet of the close-piling along the north side of the pier, together with the caps and waling for the same distance, and about ninety of the main outside bearing and fender piles were destroyed by a violent gale. Subsequently in May and June, 1894, the sum of \$1,410.03 was expended in making good the damage done by the April storm. The sheet piling having proved a mistake, it was not replaced, but about ninety new heavy piles were driven and thoroughly braced and bolted.

In 1895-96 the sum of \$4,341.99 was applied in filling with substantial, close-piled trestle work, a space or recess on the north side of the pier near its outer end, 210 feet long by an average width of 17 feet, and in raising from two to three feet, and renewing the entire floor of the outer 225 feet in length.

In 1896-97 the sum of \$3,132.89 was applied to the reconstruction of the southern half of the shore end of the pier for a length of 450 feet in substantial pile-work; the new work was covered with 6-in. plank and securely capped, fendered and braced.

In the year 1898-99 the sum of \$579.80 was expended in the renewal and repair of the outer south corner of the pier, which was damaged by being struck by the Dominion Atlantic steamship *Prince Rupert* during a south-east blow in April, 1899. In addition to this, 40 feet in length of the inclined slope was replanked and a couple of new fender piles were bolted into position.

In 1900-01 the sum of \$2,000 was expended in necessary renewals.

In addition to this an open shed, 100 ft. long by 33 ft. 6 in. wide, was erected on the outer end of the present shed and office, and over the inclined slip to protect freight when landed from steamers.

The importance of this pier may be judged by the fact that the annual collections for wharfage dues now amount to nearly \$3,000.

During the present fiscal year the sum of \$8,509.24 was expended in repairs and improvements. The old freight shed was moved 100 feet up the pier and raised four feet in height. Adjoining it outwardly there has been built a new shed 202 feet long, the upper 100 feet in length being built with a floor on a level with the floor of a box car and the lower 102 feet built level with the floor of the pier. A portion of the pier floor was also renewed. The arrangement is now most satisfactory and convenient for the handling of freight. Spring tides rise 24 feet, neaps about 20.

DRUM HEAD.

Drum Head, Guysborough county, is on the south or Atlantic coast of Nova Scotia, about two miles south-east of the entrance to Isaac's Harbour. A shoal extending in a westerly direction from the 'Head' affords partial shelter to a small boat harbour.

During the year 1901-02 a plan and specification were prepared for a proposed breakwater, to extend 354 feet from Drum Head, in from $1\frac{1}{2}$ to 2 feet at low water, to a shoal and rock, dry at low water, at the entrance to the boat harbour. Work of construction was not undertaken, nor was any expenditure made.

EAGLE HEAD.

Eagle Head is a fishing and farming settlement of about 200 people, situate on the eastern side of Eagle bay on the Atlantic coast, about eight miles north-east of Liver-

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pool town. About twenty-five years ago the provincial government built a stone breakwater, which was 195 feet in length and from 20 to 25 feet in width. During the years 1878-82 this department extended this work a further length of 125 feet at a cost of \$2,000. It was then 320 feet in length, from 20 to 27 feet in width, and had a height of 16 feet at the outer end, with the top of the work 4 feet above h.w.o.s.t. The seaward and inner faces sloped $1\frac{1}{2}$ to 1 and $\frac{1}{2}$ to 1 respectively. This breakwater is a great boon to the fishermen of that locality, affording protection to about thirty boats, which average about 40 quintals of codfish annually, besides a large percentage of lobsters, herrings, &c. In the fiscal year 1900 the sum of \$3,387.19 was expended in repairing and extending this work, whilst during the last fiscal year a further sum of \$1,068.95 was expended in making further extension. The old work was of very faulty construction, and it was found necessary to rebuild four feet in height of the old work, starting from the top. The extension is 125 feet long and 17 feet high. The outer 35 feet of this extension is 30 feet wide on top and 50 at the bottom, whilst the inner 95 feet is 32 feet wide, with a bottom width of 56 feet. The style of construction is similar to that of the old work, but larger and more shapely stones were procured and the utmost care was exercised in their being placed in position.

EAST BAY.

East Bay, Cape Creton county, is at the head of East Bay, an arm of the Great Bras d'Or Lake.

The original wharf at this place was built by the residents, aided by the provincial government; it was a block and span structure 15 feet wide, with a 'T' head (block and span) 70 feet in length and 18 feet wide. In 1882-3 a block 71 feet 6 inches by 22 feet was added, at the outer end, by the federal government. In 1888-89 and 1891-92 the blocks of the approach were reconstructed, and during the latter year the blocks of the original 'T' head were removed and the face and ends of the block built in 1882-83 were close-piled. In 1898-99 the covering, guard rails, floor-stringers and upper longitudinal timbers of the head (71 ft. 6 in. x 22 ft.) and the covering and floor-stringers of 35 feet of the approach were renewed.

The depth along the outer face of the head at ordinary lake level is 11 feet.

During the fiscal year 1901-02 the sum of \$99.34 was expended in renewing the covering and floor stringers of the inner 45 feet of the approach, and in repairing the roadway leading along the shore to the wharf.

EAST JORDAN.

Jordan River empties into the Atlantic ocean about three miles east of Shelburne, and its mouth forms an estuary about four miles long and from one to two miles in width, with deep water throughout its whole area. At the head of the bay and on its eastern side is a settlement, of about 300 people, known as East Jordan. Two and a half miles farther up the river is another village called Jordan Falls, with a population of about 400. The bay having straight shores and being exposed to the heavy southeasterly gales, afforded no shelter for the many large vessels that called at this place to load lumber. In 1875 the department constructed a breakwater at East Jordan. The work was built of close-faced square timber cribwork, filled with stones, at a cost of \$24,569. It was built 550 feet in length, 30 feet wide and at the outer end 23 feet high. In 1878 a quantity of heavy stone was deposited on the seaward face and end to protect the foundation from scouring. In the spring of 1879 the upper portion of the outer end for a length of 100 feet was destroyed to within two feet of L.W.O.S.T. This damage was repaired in 1882-83 at an expenditure of \$5,046.12. In 1883 slight repairs were made at a cost of \$102.50. In 1890-91 part of the plank covering and sheathing was torn away by a heavy storm and replaced at a cost of \$30.03. In 1891-92 the inner portion of the work was damaged by a heavy sea, and was repaired at a cost of \$750. In the spring of 1898 this pier was damaged so severely that the ballast was spewing through the inner face of the work, thus rendering the dock useless for

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loading purposes. To remedy this the work was widened on the inside from the outside and shoreward for a length of 400 feet to an extra width of 12 feet, and the entire structure refilled, where required, with ballast, and recovered with 4 inch plank with necessary stringers and caps. When the old covering was removed the inside portion of the breakwater was found to be in a much worse condition than previously anticipated, and in the two succeeding years the sum of \$3,483.43 was expended in effecting this repairing and widening. Spring tides rise here seven feet, neaps five and a half. During the past fiscal year the sum of \$400.01 was expended in carrying this extra width a farther distance shorewards of 40 feet.

This work may last for several years yet, but in the future some provision should be made for a new breakwater which will entail a large outlay, and which I will not discuss further.

ECUM SECUM.

Ecum Secum Inlet, Guysborough county, is on the southern, or Atlantic coast, of Nova Scotia, nine miles to the westward of Liscomb harbour, and near the boundary line between the counties of Guysborough and Halifax.

For the purpose of forming a shelter for fishing boats, and a landing for steamers and vessels, on December 17, 1900, a contract was entered into for the construction of a public wharf.

The work of construction was commenced on August 1, 1901, and the contract was completed in a satisfactory manner on October 5 of the same year.

The wharf is 160 feet long and 22 feet wide on top, with an L on the eastern side of the outer end, 22 by 22 feet. It is a continuous native timber structure, constructed of round timber, laid open faced, fully ballasted, double fendered on the seaward face, the end and around the L, and single fendered on the inside face; close-sheathed on the seaward face for a distance of 60 feet from the outer end, on the outer end and on the eastern face of the L. The depth of water at the outer end, at low water, is 10½ feet.

Spring tides rise six feet.

Expenditure to June 30, 1902, is \$4,197.80.

FAULKNER'S CREEK.

Faulkner's Creek, Folly Village, is a farming settlement of about 300 people, situated close to the mouth of the Folly river where it enters Cobequid bay, about ten miles west from Truro, the county town of Colchester. Faulkner's creek enters the Folly river close to the village.

For the convenience of the neighbouring population in the shipment of lumber and farm produce, the department, during the fiscal year, expended the sum of \$1,359.29, in building a wharf with a road approach. The wharf, which is constructed of pile-work, is 102 feet long, 25 feet wide, and at the outer end 22 feet high, where, at high water, spring tides, there is a depth of 20 feet of water. It is substantially built of pile bents, well braced, bolted and fendered and covered with 3-inch spruce plank. The road approach, built of earth and covered with gravel, is in all 625 feet long, 450 feet from the public road to the dyke, and 175 feet thence to the shore end of the wharf.

Spring tides rise 51 feet, neaps 44 feet.

FRIAR'S HEAD.

Friar's Head, Inverness county, is on the west coast of Cape Breton Island, 6 miles to the northward of the entrance to Margaree harbour.

In 1900-01 the sum of \$494.50 was expended in procuring part of the materials required in the construction of a breakwater designed to close an opening in a ledge of rock lying parallel to the shore, at a fishing station near Friar's Head, and affording partial shelter to a small wharf and to the anchorage for boats. The work proposed

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included a concrete wall 90 feet in length, 4 feet in width on top and 8 feet in height from 1 foot above low water, with a talus of large stones on the seaward side, sloping 2 to 1 from the top of the wall.

During the fiscal year 1901-2 the sum of \$1,097.81 was expended in constructing about three-fifths of the concrete wall and one-half of the talus, and in procuring part of the cement required to complete the work.

GABARUS.

Gabarus Bay, on the Atlantic coast of Cape Breton Island, is 5 miles wide at the entrance between White Point and Cape Gabarus, and extends inland 5 miles.

On September 5, 1900, a contract was entered into for the construction of a breakwater at Harbour Point, near the head of the bay.

The work under contract was commenced in July, 1901, and completed in January, 1902.

The breakwater is 190 feet in length, including an inner section 70 feet in length and 16 feet in width on top, of round timber laid open-faced and close fendered on the seaward side; and an outer section 120 feet in length and 24 feet in width on top, of squared timber, close-faced and close-fendered on the seaward side, at the outer end, and on the inner side for a distance of 15 feet of creosoted and the superstructure of native timber.

The top of the covering is 5 feet above extreme high water, and the depth at extreme low water at the inner and outer ends of the outer section are respectively 1 foot and $12\frac{1}{2}$ feet.

Spring tides rise to 5 feet.

Expenditure for fiscal year, \$8,259.50.

GEORGEVILLE.

Georgeville, Antigonish county, is on the southern shore of Northumberland Strait, $6\frac{1}{2}$ miles south-west from Cape George.

The wharf, as completed in 1892-3, was 207 feet long and 20 feet wide with an L 20 by 20 feet, making a width of 40 feet at the outer end, but during 1896-7-8 an extension 44 feet in length, 40 feet in width, with an L 20 by 24 feet, was added thereto, making a width of 60 feet at the outer end. The total length of the wharf is now 251 feet and 20 feet wide for a distance of 187 feet, 40 feet wide for a distance of 40 feet, and 60 feet wide for the remaining distance of 24 feet. The inner end of the wharf for a distance of 87 feet was of stone, floored over, and the remainder of the work of squared timber close-faced and protected by sheathing and fenders. The depth of water at the outer end at low water is $6\frac{1}{2}$ feet.

During the severe north-west gale of September 12, 1900, which caused so much damage in the Gulf of St. Lawrence, the woodwork on the stone approach was partly lifted up by the sea and removed several feet, and the sum of \$291.23 was expended in putting it back into position; but shortly afterwards the top was again disturbed by the sea during a heavy gale.

During the fiscal year the sum of \$699.47 was expended in removing and taking apart the woodwork on the top of the stone approach; the stone wall was taken down to a depth of 4 feet and in its place crib-work was substituted, fully ballasted and covered over with the old plank, and the outer faces of both crib-work and stone wall were close-sheathed.

Spring tides rise $4\frac{1}{2}$ feet.

GRAND ETANG.

Grand Etang, Inverness county, is situated on the Gulf of St. Lawrence, about midway between the harbours of Margaree and Cheticamp.

The opening of a channel through a beach which separated the waters of the gulf from a large and deep fresh-water pond, and the construction of channel protection

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works to make the pond available for the use and shelter of fishing boats and small vessels necessitated the diversion of the highway across the beach and the construction, in 1895-6, of a bridge across the pond 500 feet above the former crossing.

The bridge is 563 feet in length, including the east and west approaches of brush and stone, with crib-work abutments, respectively 74 and 51 feet in length, and 438 feet of pile-work. It is provided with a hand-rail on each side, an opening for boats and a draw. The depth at extreme low water at the centre is about 6 feet, and to firm bottom through water and soft mud or silt, 24 feet.

The piles having been weakened by the ravages of the teredo, temporary repairs were made in 1898-9 and 1899-1900.

During the fiscal year 1901-2 the sum of \$2,799.35 was expended in temporary repairs and in procuring all the creosoted piling and part of the native timber required for reconstructing the bridge.

GRAND NARROWS.

Grand Narrows, Cape Breton county, is on the southern shore of Barra Strait which separates the Great from the Little Bras d'Or lake. It is an important station on the I. C. R., at the southern end of the railway bridge which spans the strait at this place. It is also a landing-place for steamers, which call twice a day with mail and passengers for and from Baddeck and make connection with the express trains going east and west.

The wharf is 287 feet in length, including 67 feet of crib-work filled with brush and stone and covered with gravel; 80 feet of pile-work, built in 1885-86 by the department over the remains of the outer portion of an old landing pier built by the provincial government, and an extension 140 feet in length built by the department in 1883-84. The extension consists of three blocks, each 20 by 20 feet, and an outer block 20 by 60 feet of round timber crib-work, with openings of about 16 feet.

The depth of water at the outer end of the extension is 12 feet at low or 13 feet at high lake level.

During the year 1891-92 the piles in one bent of the pile-work and the stringers were renewed; the outer block of the extension was raised and repaired and its faces were close-piled; 25 fender piles were placed where required, and the covering, over 105 feet of pile-work and extension, was renewed.

The wharf having since fallen into a very dilapidated and dangerous condition, owing to the natural decay and the ravages of the teredo, during 1900-01 the sum of \$147.68 was expended in effecting temporary repairs to make it available as a landing-place for the balance of the season.

During 1901-02 the sum of \$1,711.50 was expended in procuring all the necessary materials required, including the creosoted piling.

GRANVILLE CENTRE.

Granville Centre is a scattered settlement of some 300 people situated on the right or north bank of the Annapolis river, 4 miles east, or above, Granville Ferry. Both banks of the Annapolis river from the town of Annapolis to the head of navigation at Bridgetown, a distance of about 15 miles, are thickly-settled by a thrifty, agricultural and fruit-growing population.

During the year the sum of \$1,101.02 was expended in constructing a pile-wharf 90 feet long, 25 feet wide, with an L 25 feet long, giving a face length of 50 feet along the face of the wharf. The wharf is 18 feet high, carrying at high water a depth of 16 feet.

Spring tides rise about 27 feet.

GRANVILLE FERRY.

Granville Ferry is a prosperous and beautifully situated village of about 600 people, on right bank of River Annapolis, directly opposite the county town of Annapolis.

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During the year the sum of \$999.28 was expended in removing a reef of boulders from the foreshore, between high and low water mark, for the purpose of enabling vessels to lie with safety on the beach for the purpose of repairs or of loading or unloading cargo. The area from which the boulders have been cleared is about 400 feet long by a width of about 100 feet.

Spring tides rise about 27 feet.

HANTSPORT.

Hantsport, with a population of about 1,500, is situated on the left or west bank of the River Avon, here one and three-quarters mile wide, about half-way between Windsor and the mouth of the river where it enters the Basin of Minas. It is an important station on the Dominion Atlantic Railway, 7 miles from Windsor and 53 from Halifax.

In 1897-98 the department built a public wharf. It is a strong, well-built structure of stone-filled crib-work, 200 feet in length, 32 feet wide, with an L 32 feet long on the outer end, giving a face length of 64 feet where it has a height of 26 feet. At high water there is a depth of 23 feet along the face of the work. At low water the beach is dry.

In the present fiscal year the sum of \$200.09 was expended in under-pinning with timber and brush the south-east outer corner of the work which had been undermined by the current during ebb spring tides.

HARRIGAN COVE.

Harrigan Cove is a settlement of some 300 people engaged in fishing, farming and lumbering, and to a small extent in gold mining, situated 70 miles east of Halifax (95 miles by road).

In the present fiscal year, the department expended the sum of \$1,461.71 in constructing a public wharf for the purpose of landing coal and general merchandise, for the export of fish, &c.

The work, which is constructed on piles, is 120 feet long, 25 feet wide with an L, on the outer end, 20 feet long. At the outer end, with a face length of 45 feet, there is a depth of water at l. w. o. s. t. of five feet. The approach is earth embankment, 48 feet long, 25 feet wide and from 2 to 6 feet high.

HOCK INLET.

This place is the southernmost point of Nova Scotia, situate about two miles south-east of Clarke's Harbour, on the Island of Cape Sable. The people are entirely engaged in fishing, and in stormy weather have hitherto been compelled to haul their boats up or expose them to the dangers of the heavy seas in unsheltered berths. Between their boat anchorage and a good safe harbour was a series of sand flats about a thousand feet in length.

During the last fiscal year the sum of \$484.29 was expended in opening a channel.

INGONISH (NORTH).

Ingonish (North), Victoria county, is on the north-east coast of Cape Breton Island, about midway between Sydney harbour and Cape North. It is separated from the South Bay of Ingonish by a narrow, rocky and precipitous peninsula, over two miles in length.

On December 6, 1899, a contract was entered into for the construction of a breakwater at Archibald's Point, on the north side of the bay, for the purpose of forming a harbour of refuge for fishing boats, and the work was completed on December 20 of the same year.

The breakwater is 484 feet long, with an L 77½ feet long, and from 18 feet wide at the inner to 24 at the outer end, and is constructed of squared timber, laid close-faced, with a creosoted timber substructure, fully ballasted and fendered, sheathed on the seaward face and end, and protected on the seaward face by a stone talus.

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The depth of water along the face of the L, at low water springs is 11 feet.

During the last fiscal year the sum of \$951.36 was expended in raising the stone talus for a distance of 220 feet from the inner end, which was flattened out by the action of the sea. About 650 cubic yards of large and heavy stone were placed, and the slope was raised to the top of the work.

Spring tides rise 4 feet.

IONA (NEW WHARF).

Iona, Victoria county, is on the northern side of Barra Strait, which connects the Great with the Little Bras d'Or lake. It is a station on the I.C.R., at the northern end of the Grand Narrows railway bridge, and a landing place for the steamers of the Bras d'Or Steam Navigation Co.

During the winter months, ice and weather permitting, a steamer carrying mails and passengers keeps up daily communication between Baddeck and Iona, and as at times, owing to the presence of ice, and for other causes, the draw in the bridge cannot be opened, and the steamer cannot reach the old wharf on the western side of the bridge, the sum of \$5,500 was voted for expenditure during 1901-02 towards the construction of a new wharf on the eastern side of the bridge, and a contract was entered into on Oct 29, 1901, for its construction.

The work under contract is a block and span structure 260 feet in length, consisting of six crib-work blocks, with openings between them of 18 feet. The three inner blocks are 40, 22 and 22 feet in length respectively, and 20 feet wide; the three outer blocks are 22, 22 and 42 feet long respectively, and 30 feet wide on top. The blocks are constructed of round timber, laid open-faced, with creosoted substructures, double fendered on the sides and the end, and with the outer faces of the three outer blocks close-sheathed. Further a road 350 feet in length and 20 feet in width on top is to be constructed to connect the wharf with the railway station.

The depth of water, at low lake level, at the outer end of the wharf, will be 10 feet.

The work was commenced early in May, 1902, and at the end of the fiscal year about three-quarters of the work under contract had been completed at a cost of \$5,499.61.

P.S.—The work was brought to a satisfactory completion on August 6, 1902.

ISAAC'S HARBOUR.

Isaac's Harbour, Guysborough county, is a small but safe harbour on the southern or Atlantic coast of Nova Scotia, situated about 36 miles to the westward of Cape Canso, and 16 miles to the eastward from the entrance into St. Mary's river.

A contract for the construction of a public wharf, on the western side of the harbour, was entered into on November 2, 1900. Work was completed on August 5, 1901.

The work is 295 feet in length and extends out to 12 feet at low water, and consists of an abutment 135 feet long and 22 feet wide on top, with side and end walls of dry rubble masonry and centre filling of stone, and of a block and span extension 160 feet in length, consisting of three blocks, each 22 by 22 feet, and an outer block 22 by 48 feet, with 18 feet openings between the blocks. The outer block is placed lengthwise of line of channel, forming an L 22 by 26 feet. The blocks are constructed of native round timber, laid open-faced, partly ballasted, and the outer faces of the outer block and the northern face of the block next to it have been close-sheathed as a protection against damage by running ice.

Spring tides rise six feet.

Expenditure for fiscal year to June 30, 1902, is \$1,539.50.

JOHNSTON'S HARBOUR.

Johnston's Harbour, Richmond county, formerly known as Hay Cove, is an inlet of the Great Bras d'Or lake, on its south shore, distant 13 miles from the St. Peter's canal and 20 miles from the head of East Bay.

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In 1881, the residents of the district constructed a wharf 40 feet long and 21, feet wide, on the eastern side of the cove, and in 1883-4 the work was raised by the department a height of three feet, and a block 27 by 20 feet was placed on the southern side of the old work. During 1893-4 the work was extended by 20 feet of pile-work, of which 10 feet are on the old work and 10 feet outside of the old face.

During the last fiscal year the sum of \$329.92 was expended in renewing the covering and the cap on 30 feet of the outer end, and in extending the face of the wharf two feet on the southern and ten feet on the northern end by pile-work.

The work is now of an average length of 56 feet and 41 feet wide, and has a depth of water, at low lake level, of from 10 to 14 feet.

The difference between high and low lake level is 15 inches.

KEMPT HEAD.

Kempt Head, Victoria county, is on the northern side of Boularderie island, on the Great Bras d'Or channel, and about one mile from Boularderie Head, the south-western end of the island.

On April 30, 1901, a contract was entered into for the construction of a wharf. The work was commenced on November 2 and carried on in a vigorous manner until December 16, when it was suspended for the winter. Operations were resumed on May 8, 1902, and the contract completed on June 4 following.

The work is 185 feet in length, and consists of an approach of stone, clay and gravel, 10 feet long and 20 feet wide on top; of a cribwork abutment 55 feet in length and 20 feet in width; of two crib-work blocks, each 20 by 20 feet; and of an outer block 20 by 40 feet, with 20 feet openings between the blocks. The abutment and the blocks are of round timber, laid open-faced, creosoted up to high water, well protected with fenders, and the outer faces of the two outer blocks with close-sheathing.

The depth of water at the outer end is 12 feet at low water and 13½ feet at high water.

Expenditure on this work up to June 30, 1902, is \$5,242.56.

KINGSPORT.

Kingsport, formerly known as Oak Point, is a village of some 500 people, on the south-west side of the Basin of Minas, between the mouth of the Cornwallis river and Cape Blomidon. It is the terminus of the Cornwallis Valley Railway (opened in December, 1890, and now a branch of the Dominion Atlantic Railway), running to Kentville, the county town, 14 miles to the south.

A pier, 445 feet in length, built of piles, already stood here when the harbour was taken in charge by the Department of Public Works. In 1873-4 the department built cribwork 12 feet wide on the eastern or exposed side of the wharf for the purpose of breaking the force of the sea. In 1875, the work was extended a length of 240 feet by a width of 30 feet. In subsequent years repairs were made several times. In December, 1890, the Cornwallis Valley Railroad was opened for public traffic, and about the same time the wharf, which forms the terminus of the railway, and on which is a track, passed by agreement with the department under the control and ownership of the railway company.

Spring tides rise 48 feet, neaps 40 feet.

During the present fiscal year the sum of \$9,278.70 was expended in rebuilding the upper half of the outer block of solid cribwork, 270 feet long, which was built in 1875. A widening or reinforcing block 10 feet wide was also built on the north side for the whole length of this outer portion.

LABILLE'S POINT.

Labille's Point, Richmond county, is on the eastern side of the entrance to Shaw's Cove, which is situated on the southern coast of Cape Breton island, about 7 miles to the south-eastward of the southern entrance of the St. Peter's canal, and 1 mile to the westward of L'Ardoise breakwater.

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Shaw's cove is very shoal, but it accommodates a large number of small fishing boats, and its eastern shore being the best protected from the sea, is used as a landing place for boats.

As it was found that Labille's Point was wearing away, and the undertow sweeping around it, made the landing, at times, dangerous, during 1900-1 the sum of \$485.44 was expended in the construction of a small breakwater at Labille's Point. The work constructed extended to low water, and is 50 feet long, 12 feet wide, and consisted of a stone abutment 10 feet long, and a rough crib-work block 40 feet long, fully ballasted, fendered and covered with large stone.

During the last fiscal year the sum of \$231.30 was expended in extending the breakwater a further length of 16 feet.

LARRY'S RIVER.

Larry's River, Guysborough county, is at the western extremity of Tor Bay, on the southern or Atlantic coast of Nova Scotia, 24 miles to the westward of Canso harbour.

The harbour, a channel through mud flats, improved by dredging, was formerly protected from the eastward by a beach and bar of shingle. Since 1896, the point of the beach at the northern extremity of the bar and the bar itself, have been lowered and carried inwards towards the channel.

In order to restore the shelter, formerly afforded by the beach and bar, a sum was appropriated towards the construction of a breakwater.

The work specified is 1,005 feet in length, including 500 feet of cribwork with stone talus in from 1 to $3\frac{1}{2}$ feet at extreme low water, with stone embankments at the north and south ends respectively 380 and 125 feet in length.

LINGAN.

Lingan, or Bridgeport Harbour, Cape Breton county, is at the head of Indian bay, on the north-east coast of Cape Breton island, about 5 miles to the eastward of the entrance to Sydney harbour. A large pond or basin, having a depth of 8 feet at low, or 11 feet at high water, is separated from Indian bay by a beach of sand. The entrance, which forms the harbour, was deepened and straightened by dredging in 1878 to 1880, to improve the facilities for shipping coal from the Lingan mines, since abandoned. It is now crossed by a bridge built by the provincial government for the accommodation of traffic, over the beach, between Lingan and Bridgeport.

In 1876-8 a work of brush and stone 1,900 feet in length was constructed on the beach.

The work afforded an efficient protection to the beach up to 1893, but has since been carried away, in places, over distances aggregating 1,400 feet.

During the fiscal year 1901-2, the sum of \$1,999.80 was expended in constructing 1,000 feet of brush and stone work 14 feet in width and $4\frac{3}{4}$ feet in average height, leaving 1,270 feet 13 feet in width and 3 feet in average height, to be constructed to complete the beach protection work.

LITTLE BRAS D'OR.

Little Bras d'Or (so called), Cape Breton county, is a settlement on the north-eastern end of St. Andrew's channel, an arm of the Little Bras d'Or lake, and near the western entrance to Little Bras d'Or channel, which connects St. Andrew's channel with the Atlantic ocean.

The sum of \$3,000 was granted for expenditure during 1900-1, towards the construction of a wharf, and on May 7, 1901, a contract was entered into for its construction.

The work was completed in a very satisfactory manner on June 30.

The wharf is 183 feet in length, measured on the centre line (including the L), and consists of an approach of stone, clay and gravel, 16 feet in length; of a crib-work abutment 40 feet long and 20 feet wide, of two crib-work blocks, each 16 by 20 feet, and of an outer block 50 feet long and 24 feet wide, with openings between the blocks. The

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abutments and the blocks are constructed of round timber, laid open-faced, creosoted up to high lake level, and protected by fenders, and the outer faces of the two outer blocks, with close-sheathing.

The depth of water along the channel face, at low lake level, is 12 feet and at high lake level, $13\frac{1}{2}$ feet.

Total cost of work up to June 30, 1902, is \$3,945.70.

LITTLE NARROWS (BIG POND).

Big Pond, Victoria county, known locally by this name, but marked on the charts 'Oyster Creek,' is on the south side of St. Patrick's channel, an arm of the Bras d'Or lake, $2\frac{1}{2}$ miles to the eastward of Little Narrows.

During the fiscal year 1901-2, the sum of \$996.78 was expended in opening a channel through a low sand beach separating Big Pond from St. Patrick's channel, and in constructing protection work.

The new channel is 20 feet in width and has a depth of about 2 feet at low or 3 feet at high lake level. The protection works are of brush and stone, 11 feet wide on top, extending inwards, through the beach, on each side 175 feet; and of crib-work, 16 feet wide on top, extending outwards, on the north side, 43 feet, and on the south side 22 feet.

LITTLE NARROWS.

Little Narrows, Victoria county, is on the south side of the Little Narrows, a contraction of the St. Patrick's channel and arm of the Bras d'Or lake, at a point 7 miles to the eastward of the village of Whycocomagh.

The wharf constructed at Little Narrows in 1887-88 consisted of a shore block $47\frac{1}{2}$ feet in length and 20 feet in width, and a pile extension 72 feet in length, with an 'L' 40 feet in length on the west side. After its completion a warehouse was built over the shore block, with a passage through it to the extension.

In 1897-98 the sum of \$499.65 was expended in reconstructing the outer end or 'head,' a 'T' head 60 feet in length having been substituted for the outer 20 feet and 'L'; in renewing the piles in three out of five bents in the extension, and in repairing the covering.

During the fiscal year 1901-02, the sum of \$1,494.80 was expended in effecting the following repairs and improvements, and in reconstructing a small ferry slip.

The outer end or 'head' was repaired and strengthened by placing thirty-five fender piles, twenty-seven at the outer face and four at each end, and 4 new bearing piles under each bent; the warehouse was removed, placed on a strong framework at the west side of the shore block and thoroughly repaired, the repairs including the renewal of the flooring and roof covering and the painting of the exterior. The pile extension and the superstructure of the shore blocks were practically reconstructed, and some piles at the west end of the 'head' (originally in outer 20 feet of the 'L') were removed.

LIVINGSTON'S COVE.

Livingston's Cove, Antigonish county, is on the south-eastern shore of Northumberland strait, about 2 miles south-west from Cape George.

For the purpose of affording shelter for the fishing boats of the district, and a landing place for steamers and small vessels, a breakwater was commenced in 1898-99, extended in 1899-1900 and in 1900-01.

At the end of 1900-01 the work completed consisted of a breakwater and approach thereto, 351 feet in length; a shore abutment with stone retaining walls, 30 feet long; a crib-work block, 80 feet long and 19 feet wide, and a crib-work extension, 136 feet long and 24 feet wide on top. The crib-work is constructed with native squared timber, laid with 7-in. openings, fully ballasted, fendered and sheathed with hardwood sheathing on the seaward face and outer end.

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The sum of \$3,997.50 was expended during the past fiscal year in the construction of an extension 42 feet long and 24 feet wide on top, built in the same manner as the work adjoining it. All the necessary materials for the construction of a head block, 48 by 24 feet, were procured and at the end of the fiscal year the substructure of the block was constructed and ready for sinking in place.

The work when completed will be 312 feet in length, exclusive of the road, with an 'L' on the western side of the outer end 24 by 24 feet, and extend out into 9 feet of water, at low water springs.

Spring tides rise $4\frac{1}{2}$ feet.

LOCKEPORT BREAKWATER.

Lockeport is situate on the Atlantic coast, about 14 miles south-east of Shelburne, and has a population of about 800. It has been and is one of the most important centres of the fishing industry on the south coast of Nova Scotia. During the year 1898-99 the dredge *Canada* did a large amount of work, but it was observed that owing to the drifting of sand through the passage between the mainland and a small island known as Cranberry island the channel was filling up and this sand threatened in a short time to destroy the usefulness of the entire harbour. In order, therefore, to serve the business interests it was considered necessary that this passage, through which the sand drifted, should be closed. In order to do this the department decided to construct a breakwater across this passage, and during the year 1899-1900 the sum of \$2,948.98 was expended. In the fiscal year 1900-01 the sum of \$995.06 was expended in completing the work, making a total outlay of \$3,944.64. During the last fiscal year an additional sum of \$299.64 was expended in effecting necessary repairs thereto. Owing to insufficient brush being placed at the bottom or foundation of this work when it was first built, and as the crib-work at two places had no further foundation than the sand, which always shifts, the work caved in at these places. During the last year 80 feet in length was practically rebuilt, whilst 150 tons of additional stones were added to the eastern end or approach. The work done for this money was, therefore, 4,480 cubic feet of round log crib-work and 150 tons of ballast. The work as now completed is a workmanlike and satisfactory structure and is in excellent condition. It is 1,046 feet in length, 8 feet wide on top and has an average height of 8 feet; 910 feet of its length is constructed of stone-filled crib-work and its remaining 136 feet in length consists of a rock bank on its eastern end. About 75 feet between its western end and the shore was left open in answer to a petition of the residents, but it is a menace to the western end of the breakwater and should be filled up with stone, as the people do not use it to any extent.

LOWER COVE.

Lower Cove is a small and scattering settlement of about 350 or 400 population, situate on the shores of Cumberland basin, about $2\frac{1}{2}$ miles north of Joggins Mines. The chief industry is the manufacture and export of grindstones, which business is conducted by a company known as the Atlantic Grindstone Co., Ltd. The number of employees differs with the seasons, but they never have less than 60 or more than 120. This company expended a large sum in constructing a wharf. The wharf was situated on the shores of a small cove, from which this place takes its name, but even then it was exposed so that it was difficult to procure vessels to load at their wharf. In order to protect this cove the department during the last fiscal year have been engaged in constructing a breakwater. There had been an old work on the site of this work, which had been built by the local government, but it had been partially destroyed and was much too short to properly protect the cove at any time. The breakwater is 120 feet longer than the old one and is built of round log stone-filled crib-work of a continuous nature. Its outer or seaward side and the outside end are to be close-sheathed, with a $4\frac{1}{2}$ -inch hewn sheathing. The total length of the work will be 202 feet of a uniform width of 20 feet on top and a height at the outer end of 29 feet. The top logs are 10 feet above h.w.o.s.t. Tides rise and fall 33 feet and 40 spring. This work was finished to a height of 22 feet at the close of the fiscal year. The amount expended

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during the last fiscal year was \$2,440.49. The work at its present height protects the cove so that vessels can moor at the company's wharf without any trouble, even when the breeze is strong, but owing to the heavy spring tides it is necessary that the work should be built to its designed height.

MABOU.

Mabou Harbour, Inverness county, is on the west coast of Cape Breton island, 6 miles north-east from Port Hood.

The entrance was formerly at the southern extremity of a range of sand hills, and by an intricate channel obstructed by a bar, over which there was a depth of only 4 feet at extreme low water.

The opening of a new channel through the sand hills at the northern extremity was undertaken in 1872. A pier 835 feet in length, on the south side of the new channel, was completed in 1876, and the same year the old channel was closed. Expenditures were made nearly every year from 1876 to 1901 in repairs to the pier; the construction of brush and stone work on the south side and of protection works on the north side of the channel, and in dredging.

On the completion of repairs undertaken in 1900-1, the works included:

On the south side (a) the remains of a pier 835 feet in length and 20 feet in width, founded in about 12 feet at extreme low water, and sloping from about 10 feet below extreme low water at the face to 2 feet above extreme low water at the back.

(b.) A work of brush and stone of various widths extending outwards from the outer end of the pier about 1,600 feet, the inner end of which is 8 feet above and the outer end about 5 feet below extreme low water.

(c.) Brush and stone works 10 to 12 feet in width, on top, at back of the pier and extending inwards about 500 feet from the outer end thereof, and on the north side, five pile and brush groins, four of which are from 75 to 85 feet, and one 45 feet in length.

The minimum width of the channel opposite the pier is about 130 feet. The depth at extreme low water in the channel, opposite the pier, varies from 12 to 15 feet. Over the bar, about 600 feet out from the head of the pier, the minimum depth at extreme low water is 8 feet 3 inches.

Spring tides rise 4 feet.

During the fiscal year 1901-2, the sum of \$1,499.87 was expended in completing the brush and stone work at the back of the pier, with the exception of the wing wall, 90 feet in length, at the inner end, which requires 3 feet in height to complete.

MALIGNANT COYE.

Malignant Cove, Antigonish county, is situated on the south-eastern shore of North-umberland strait, about midway between Arisaig and Georgeville, and distant about 4 miles from each.

The sum of \$5,000 was appropriated for expenditure during 1899-1900, in opening a channel for boats through the gravel beach, into a small pond at the head of the cove, and in constructing protection works. A plan and specification for works extending outwards to 7 feet at low water springs were prepared, and the sum of \$3,893.35 was expended in procuring materials required in the construction.

The works proposed included the construction of piers placed 60 feet apart on either side of the channel, which was to be excavated to 2 feet at low water. The piers extending 248 feet inwards from low water outside, to be 10 feet wide and founded at low water; those extending from low water outwards, to be 16 feet wide on top, over 60 feet from their inner ends, and 22 feet in width over the outer 30 feet. All crib-work to be built of round native timber, laid open-faced, fully ballasted and close-sheathed at the ends and on the channel faces.

During the year 1900-1, the sum of \$6,123.64 was expended in the construction of the outer piers, each 90 feet in length, and of a portion of the inside pier on the eastern side of the channel, 188 feet in length.

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During the last fiscal year the sum of \$2,464.85 was expended in completing the works proposed, and in the construction of a crib-work extension to the western inner pier, 60 feet long and 10 feet wide, to prevent the reopening of the old channel through the beach.

Spring tides rise $4\frac{1}{2}$ feet.

MARGAREE.

Margaree Harbour, at the mouth of the Margaree river, is on the west coast of Cape Breton island, about 30 miles north-east of Port Hood. It has a narrow and intricate channel, through which the tide runs at the rate of four knots, and its entrance is obstructed by a bar of shifting sand, over which there is, at times, a depth of only 5 feet at extreme low water.

Expenditures have been made by the department in the construction and maintenance of channel protection and improvement works on the west side of the entrance, and in the construction of beach protection work on the east side.

The works on the west side include works built by the provincial government and extended by the department, and works of improvement undertaken in 1900-1.

The old provincial government works (reconstructed by the department) extend 400 feet from the shore, across what was originally a false channel, to a large rock opposite the inner entrance and thence, at right angles, to the edge of the channel.

The work built by the department extends from the north side of the outer provincial government work outwards, along the west side of the channel 595 feet. It is in four sections: 85 feet (built in 1876), 130 feet (built in 1879), 200 feet (built in 1890), and 180 feet (built in 1899), respectively 18, 16, 18 and 20 feet in width on top, and 15, 14, 12 and 16 feet in height. Each section is of round timber, open-faced, and is fully ballasted, and close-fendered at the sides and outer ends. The top of the covering is from 4 feet 4 inches to 5 feet above extreme high water. The depth, at extreme low water, along the channel face, originally varied from 7 to $2\frac{1}{2}$ feet.

The improvements undertaken in 1900-1, but not completed were: deepening along the channel face of the extension to 8 feet at low water over a distance of 200 feet; and the construction of a shear dam within the entrance, 180 feet in length, including 25 feet of brush and stone work 11 feet wide on top, 100 feet of pile and brush work 10 feet wide, and 55 feet of crib-work 22 feet wide founded on brush work in from 1 foot 3 inches to 9 feet 9 inches at extreme low water. During the year 1900-1 the sum of \$3,695.30 was expended, \$400 in repairing the channel face of the outer provincial government work; \$1,796 in procuring materials and constructing the brush and stone work, the pile and brush work, and the substructure of the crib-work of the shear dam; and \$1,499.30 in about one-half the rock excavation required to give 8 feet at low water along the channel face of the extension.

During the fiscal year 1901-2, the sum of \$3,065.57 was expended, \$995.78 in completing the shear-dam with the exception of making a roadway over the brush and stone at the inner end; and \$1,990.09 in completing the submarine rock excavation with the exception of the removal of a small quantity of excavated material at the inner end of the cutting, and of some points of ledge rock over which there is a depth of only 6 feet 9 inches at extreme low water.

Spring tides rise 4 feet.

MARGAREE ISLAND.

Margaree Island, Inverness county, is situated in the Gulf of St. Lawrence $2\frac{1}{2}$ miles off the western coast of Cape Breton island, and 27 miles north-east from Port Hood.

In 1899-1900 and 1900 to 1901, the sum of \$3,312.34 was expended in procuring materials and in nearly completing a wharf, near the southern extremity of the island, 98 feet in length and 20 feet in width, including a stone abutment 26 feet in length, and a crib-work block extending 72 feet to $7\frac{1}{2}$ feet at low water.

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During a gale, on September 12, 1900, the 72 foot block, after losing its ballast, was moved 17 feet out of position, and the stone abutment was destroyed.

During the fiscal year 1901-02 the sum of \$1,399.13 was expended in replacing and completing the 72 foot block, in constructing 28 feet of crib-work between it and the shore, and in making a roadway or approach along the face of the cliff.

MARGARETVILLE.

Margaretville, Annapolis county, is the largest and most important village on the south coast of the Bay of Fundy, between Digby Gut and Scott's Bay; it is 42 miles north-east from the former, 36 miles south-west from the latter, and 8 miles north from Middleton, an important station on the Dominion Atlantic Railway. It has a population of about 500 engaged in fishing and farming.

A pier was begun in 1837 by the provincial government, and subsequently extended to a length of 471 feet. The work was taken over by the Public Works Department in 1871, since which time it has had frequent renewals and repairs. In December, 1885, the pier was seriously damaged by a severe storm, a breach nearly 150 feet long being made clean through it, besides receiving other injuries. The Margaretville Pier Company transferred their title to the pier to the government on August 3, 1886. In 1886-87, the above described damage was made good. In October, 1890, a severe gale made a breach of 117 feet in the outer portion of the work, besides doing other damage. In March, 1894, the remaining block, 86 feet in length, seawards from the 117 feet gap, was totally destroyed. In 1897-99 the outer block was rebuilt. This new block, which is substantially built of round log crib-work, close-sheathed on the seaward face and outer end, is 185 feet long, 42 feet wide and from 22 to 23 feet high. In 1900-01, the sum of \$500 was expended in renewing the floor on the shoreward end of the work and doing other works.

In the present fiscal year the sum of \$1,560.50 was expended in sheathing the seaward face of the breakwater for a length of 155 feet on the shore end, and in removing gravel from the eastern or land side to improve the schooner berth, and in constructing a new breakwater 250 feet to the eastward of the main work. The new breakwater is 110 feet long, 16 feet wide, 7 feet high at the shore end, 25 feet wide and $16\frac{1}{2}$ feet high at the outer end. The work is substantially built of round log crib-work, well fendered, bolted and filled with ballast.

Spring tides rise about 30 feet,

MERIGOMISH.

Merigomish Harbour, Pictou county, is on the southern side of Northumberland Strait, 10 miles to the eastward of the entrance to Pictou harbour.

During the year 1880, a wharf was constructed in a cove to the eastward of Hardwood Point, and about one mile distant from Merigomish station on the I.C.R., and during 1898-99-1900, it was extended a length of 100 feet, by pile-work.

The wharf is now 254 feet long and 20 feet wide on top, and consists of an approach of earth, with stone retaining walls, 70 feet long; of block and span work, 84 feet long, and of 100 feet of pile-work, with an inclined landing slip at the outer end. The depth of water at the outer end, during low water springs, is 1 foot, and at high water $6\frac{1}{2}$ feet.

During the last fiscal year the sum of \$89.83 was expended in the construction of a small warehouse 10 by 16 feet, with 7 feet posts, at the inner end of the approach, and in repairs to the approach. The building was boarded in, the roof and sides were shingled, and it was painted outside.

Spring tides rise $5\frac{1}{2}$ feet.

METEGHAN.

Meteghan, Digby county, is situated on the south side of St. Mary's bay, 25 miles north of Yarmouth, 20 miles south of Weymouth, $2\frac{1}{2}$ miles from Meteghan river and

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40 miles from Digby, the county town. The nearest railway station on the Dominion Atlantic Railway, which lies approximately parallel to the coast, and has its terminus at Yarmouth, is about 7 miles distant. The whole coast of St. Mary's bay, from Digby to Yarmouth, is thickly settled, being in fact, almost one continuous straggling village for the whole distance of 67 miles.

Meteghan, next to Digby and Yarmouth, is the largest and most important settlement on the bay shore, having a population of 1,000 people, engaged in farming, fishing, lumbering and general trade.

The works consist of a breakwater and landing pier, built of crib-work, between 1837 and 1860, by the provincial government and the inhabitants. The pier is about 300 feet long by 20 feet wide; the breakwater, 20 to 26 feet wide, runs out for a distance of 925 feet from the shore, and has a return or L of 85 feet at the outer end, which is 24 feet wide and 30 feet high, standing in from 25 to 27 feet depth of high water o. s. t.

In 1875, at which date the work appears to have been taken over by the department, the breakwater was extended and repaired.

In 1878, an additional length of 100 feet was built, with a portion of the L at the outer end, and in 1881 the sum of \$2,250 was expended in still further improving the structure by building an additional length of 50 feet on the L.

Repairs were made in 1883-4 and 1885 when 40 feet of new break was added, and some new ballast put in to replace that washed out. In 1887-88 the seaward face of the breakwater was close-sheathed for 700 feet in length; 575 feet of the inner face was repaired and sheathed, the whole work levelled up and some minor repairs executed; the expenditure this year was \$1,447.33, which in the departmental report for the year is given as a refund to the provincial government on account of moneys expended by them between 1867 and 1879. In 1892-3, slight repairs were made. In 1893-4 thorough repairs to the landing pier and wharf were made.

In 1897-8, the sum of \$3,141.99 was expended in constructing a reinforcing block along the whole length of the outer face of the L of the main breakwater. This work, which was rendered necessary by the eating away of the bottom timbers by the limmoria and the consequent settlement of the breakwater, is 100 feet long, 12 feet wide and 22 feet high. The upper portion of the L was also rebuilt 35 feet wide and 4 feet high. The new work is well and substantially built of round log crib-work, well fendered, ballasted and close-sheathed on all exterior faces. In 1898-9, the sum of \$1,093.20 was expended in renewing a length of 120 feet by 8 to 10 feet in height, and by 8 to 10 feet in width of the lower portion of the outer end of the seaward face of the breakwater, the work was close-sheathed for the same distance and for 40 feet on the inner side, about 10 feet in length of flooring was also renewed. A breach of 30 feet long on the seaward side, adjacent shoreward to the 120 feet before mentioned, was also rebuilt.

In the fiscal year 1899-1900, renewals and repairs to the breakwater were made.

In 1900-01, the sum of \$3,499.95 was expended in rebuilding a serious breach made in the work by a severe gale in March, 1900. The new block, which had to be built from the bottom, is 180 feet long, 22 feet wide, and from 18 to 22 feet high. In addition to this a length of 221 feet of the top of the breakwater was refloored and partly close-sheathed.

During the present fiscal year, the sum of \$3,199.93 was expended in continuing the restoration of the breakwater that has been going on for the last three or four years. The work consists of a piece 138 feet long, in about the middle of the wharf, being taken down and entirely rebuilt. Of the next 200 feet shorewards, the northern face was taken down and rebuilt 10 feet wide.

Spring tides rise 21 feet, neaps 18 feet.

METEGHAN RIVER.

Meteghan river, Digby county, empties into the Bay of Fundy at the mouth of St. Mary's bay, almost directly opposite Grand Passage, between Long island and Brier island. It is 20 miles south of Weymouth, 28 miles north of Yarmouth and 22½ miles

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north of Meteghan, or Meteghan Cove. The population of the village is about 400 people, engaged in farming, fishing, lumbering and general trade. The nearest railway station on the Dominion Atlantic railway, which runs parallel with the bay shore, is about 4 miles from the village. On the river, which is about 18 miles long, are some 20 saw-mills, most of which send lumber down to the mouth of the river for export to the West Indies and the United States, the total annual output aggregating over a million feet B.M.

The works, which were built some years before Confederation, presumably at the joint expense of the provincial government and the inhabitants, consist of two breakwaters, one on either side of the mouth of the river and inclosing an area of about 3 acres in which at h.w. o.s.t. is a depth of from 10 to 15 feet, giving ample accommodation and complete shelter to a large number of coasting and fishing vessels.

The north breakwater is about 400 feet long, 24 feet wide and 13 feet high at the outer end; they are both built of stone-filled cribwork of the usual type. When the work came under the charge of the department the older portions were much decayed, and extensive repairs were needed, which were made in 1873 at a cost of \$4,500. In 1881-82 the sum of \$2,000 was expended in rebuilding and repairing parts of both breakwaters. In 1882-83 the sum of \$3,000 was expended in close-piling and extending the south breakwater a length of 80 feet; in general repairs to the north breakwater, and in removing from the dock a quantity of rocks and boulders, which was used as ballast in the new work.

In 1898-99 the sum of \$4,110.76 was expended in extensive renewals to the shore end of the south breakwater; the work taken down and rebuilt was 400 feet long, with an average width of 29 feet and average height of 13 feet. This length was also newly close-sheathed and on the seaward side, of the same portion; a new break was built 276 feet long and 6 feet high. In the fiscal year 1899-1900 the work of restoration of the main breakwater was continued.

In 1900-01 the restoration of this work, begun in 1898-99, was continued and in removing gravel from the bottom of the stream between the two breakwaters; 184 feet in length, was taken down and rebuilt from the bottom, an average width of 27 feet, and from 18 to 19½ feet high. The next 213 feet, shorewards, which was rebuilt the previous year, was floored, including stringers, caps and plank.

During the year the sum of \$3,999.99 was expended in continuing the work of restoration begun in 1898-99. The outer 113 feet in length of the work was rebuilt practically entire. In order to straighten the outer end of the work, it was widened 24 feet at the outer end, the new block tapering to nothing 83 feet shorewards from the outer end. 83 feet in length also of the outer end of the work was close-piled on the north side to protect it against scour by the river which issues at this side. A considerable quantity of gravel was also removed from the river channel to improve the approach to the wharfs.

Spring tides rise 21 feet, neaps 17 feet.

MCNAIR'S COVE.

McNair's Cove, Antigonish county, is on the west side of St. George's bay, 2 miles south from Cape George.

A breakwater 400 feet in length and 20 feet in width was built on the north side of the cove during 1872-73-74, and in 1878 a further length of 20 feet was added thereto. In 1879 the work was carried away by drift ice, to within 100 feet of the shore end, down to from 6 to 3 feet below low water. During the summer of 1883, 70 feet of the shore end were rebuilt, and during the winter of 1884, the work was extended a length of 94 feet. In April, 1884, the 94 feet extension was badly damaged by drift ice and was subsequently carried away.

During 1886-87-88, the bottom of the damaged work was dredged out and a work 160 feet long, 34 feet wide on top, with a sloping face on the seaward side, was constructed, and on its completion the total length of the breakwater was 330 feet.

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Owing to the damage by the teredo, during 1890-91-92-93-94 the outer end was protected with creosoted timber piling, the bottom of the sloping face was close-fendered and protected by a talus of quarried stone.

During 1897-98-99, a portion of the timber wall under the sloping face, which was partly destroyed by the teredo, was cut away for a distance of 80 feet, back to the first tier of longitudinal timbers, and the newly constructed face was sheathed with hardwood sheathing 10 inches square; a new ballast floor was placed longitudinally in the new face chambers, and fully ballasted; the covering was renewed and refastened where necessary, and additional stone was placed on the talus to secure the lower ends of the sheathing.

In 1899-1900, the sum of \$574.21 was expended in sheathing a further length of 53 feet of the seaward face, in placing about 80 cubic yards of ballast in outer face chambers, and about 300 cubic yards of quarried stone in the talus, and in the renewal of cap-timber and three tiers of face-timbers, over a distance of 40 feet on the inner face, near the outer end.

During 1900-01, the sum of \$1,198.17 was expended in raising the stone talus all along the seaward face of the work, up to half tide, and the mouth of a small brook, at the head of the cove, which was continually shifting to the detriment of the boat landing, was made permanent by the construction of a shear-dam of brush and stone.

Of the amount voted for expenditure the sum of \$1,197.17 was expended during the last fiscal year in placing an additional amount of stone on the talus (about 80 cubic yards); in procuring the necessary materials for widening the inner end to the break-water (which was built in 1872, and only 20 feet wide), for a distance of 120 feet and to a width of 30 feet, and in the construction in place of the substructure of the new block.

Spring tides rise 4 feet.

MINUDIE.

Minudie is a small village of about 250 or 300 inhabitants, situate at the head of Chignecto channel and at the mouth of the river Hebert, about six miles north of the village of River Hebert. The chief occupation of the people is farming, and the facilities for landing goods and shipping their produce, chiefly hay, were practically nil. The salmon, haddock and shad fisheries are also quite extensively engaged in by some of the people. A wharf was commenced last fall and was continued this spring, the timber being procured during the spring or winter season. This wharf is costing more than other wharfs of similar class of construction, because of the expense consequent in procuring both timber and stone. The wharf consists of two parts, the approach and the wharf proper. The approach is 123 feet in length, 16 feet wide on top and 9 feet high at its outer end, whilst the wharf proper is 75 feet long, 20 feet wide and 32 feet high at the outer end, with an L or return at the outer end 25 feet long and 15 feet wide. The approach is the form of a stone bank, with the centre filled with small stones and the top gravelled for a depth of 6 inches. The wharf proper is to be of solid round log, stone-filled cribwork, being ballasted in full to the under side of the floor stringers. The total amount expended during the fiscal year 1901-02 is \$1,724.43. At the end of the past fiscal year the wharf was constructed as follows:—

The approach was about two-thirds built and the wharf was built with all fenders in position to a height of 29 feet at the outer end, thus leaving one-third of the approach to construct and the upper 3 feet of the cribwork. This will not take more than \$400, whilst an additional block at the outer end is necessary for additional width so that two vessels can load at once.

Neap tides rise 32 feet, spring 39.

MORDEN.

Morden, formerly called French Cross, King's county, is a small fishing and farming village of about 150 people, situated on the south shore of the Bay of Fundy, 50 miles north-east of Digby Gut and 9 miles north from Aylesford station on the Dominion Atlantic Railway.

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The pier or breakwater, which is the most westerly in King's county, was begun in 1846 at the joint expense of the inhabitants and the provincial government. It is built of round log cribwork, filled with ballast, close-sheathed on the seaward side and outer end. It is 365 feet in length and varies in width from 28 feet at the shore end to 45 feet at the outer end, where it is 26 feet in height. It has had many repairs, renewals and extensions, of which the following are the most important:—

In 1896–97–98, 120 feet in length of the middle of the work, which was totally destroyed by violent gales in February and October, 1895, was thoroughly rebuilt. In 1898–99 this gap was completed, other important repairs effected, and an accumulation of gravel removed from the inner side of the breakwater. In 1899–1900, 68 feet in length of the buttress on the seaward face of the work was rebuilt from the bottom to the full height of the breakwater. In November, 1899, a severe gale, accompanied by exceptionally high seas, broke over the work and destroyed 75 feet in length of the inner or shoreward side of the breakwater immediately abreast of the seaward face. In November, 1900, another severe gale destroyed 22 feet in length of the outer end of the work, which was old and much decayed. In 1900–01, the sum of \$3,829.89 was expended in rebuilding the 75 feet of the eastern or shoreward side of the breakwater which was destroyed in November, 1899, and in beginning the construction of an extension 50 feet long to replace and supplement the 22 feet length of the outer end of the work which was destroyed in November, 1900.

In 1901–02 the sum of \$1,495.08 was expended in completing the extension of the breakwater begun the previous year. The new block is 50 feet long, 44 feet wide where it joins the old work, and 30 feet at the outer end. It is of a uniform height of 26 feet, well built of round log cribwork, sheathed on the seaward face, along which there is a break 6 feet high, and filled solid with ballast.

MUSQUODOBOIT.

The village of Musquodoboit, with a farming and lumbering population of about 500, is situated in and around the head waters of Musquodoboit harbour proper, and Petpeswick harbour, which at their extreme heads are only about a mile apart.

In the present fiscal year the department expended the sum of \$1,364.04 in building a small wharf for the convenience of the inhabitants of the district, and the shipment of lumber, of which some three millions feet are annually exported; for the shipping of general farm produce and the loading of fuel and general merchandise. The work consists of a block of cribwork, 51 feet long, 17 feet wide and 14 feet high, with an earth and stone approach 50 feet in width, 80 feet in length and of an average height of 9 feet.

MUSQUODOBOIT HARBOUR.

Musquodoboit Harbour, situated 26 miles in a straight line east of Halifax harbour, is about 7 miles long north and south with a width of $\frac{1}{4}$ of a mile to a mile. At or near its head are numerous and extensive lumber mills, having an output of some seven or eight millions annually, which is exported to the English and South American markets. To enable the large sailing vessels which carry on this trade to dispose of their ballast before loading at the lumber wharfs, at the head of the harbour, the department, in the fiscal year ending June 30, 1902, constructed a ballast wharf on the east side of the mouth of the harbour. The block, which is substantially built of round log cribwork, well fendered and filled with ballast, is 40 feet long, 10 feet wide and 10 feet high. The cost is included in Musquodoboit wharf.

NEIL'S HARBOUR.

Neil's Harbour, Victoria county, is situated on the eastern coast of Cape Breton island, about midway between Ingonish and Aspy bays.

The harbour is at the entrance of a small bay, open to the south and south-east, and extending inland about half a mile. It is sheltered from the north and east by Neil's

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Head, a rocky promontory, from 10 to 20 feet above the level of high water springs, but it is not safe during gales from the south and south-east.

It is a large and important fishing station, and in order to protect the anchorage during south-easterly gales, on May 29, 1901, a contract was entered into for the construction of a breakwater, on the southern end of Neil's Head to extend to 17 feet at low water.

The works under contract include a breakwater 226 feet in length, and a road cutting 79 feet long and 20 feet wide at the bottom. The breakwater, excepting the inner end, for a distance of 44 feet, which is to be built of round timber crib-work, is to consist of close-faced squared timber crib-work. 20 feet wide on top for a distance of 114 feet, 24 feet wide for a distance of 80 feet, and 56 feet wide for the remaining 32 feet. The work is to be fully ballasted, and sheathed on the seaward faces, the outer end and on the inner face, for a distance of 112 feet from the outer end. The substructure is to be of creosoted timber, and the seaward face is to be protected by a heavy quarried stone talus, from high water mark down, and sloping $2\frac{1}{2}$ to 1.

The work was commenced on June 17, 1902, and at the end of the fiscal year the inner section of the breakwater, 44 feet in length, was built up above high water and ballasted, and the creosoted substructure of a 70 feet block was completed and ready to be placed in position.

Spring tides rise 4 feet.

The expenditure up to June 30, 1902, is \$114.71.

NEWELTON.

Newelton is situate about two miles north west of Clarke's Harbour and has a population of about 350 who are engaged chiefly in fishing and some little farming. A wharf was constructed with a view of affording adequate facilities for the landing of goods required by the residents, likewise to accommodate several small steamers which ply along this coast and which in the past could never conveniently land passengers and freight. It consists of a substantial rock bank approach 108 feet in length, 30 feet wide on top with a height at the outer end of 8 feet. This was supplemented by two stone-filled crib-work blocks each 19 feet in length, separated by a span of 11 feet, and 7 pile trestle bents separated 10 feet each, centre to centre of logs. The width of the crib and pile work is 20 feet on top and the height at the outer end is 23 feet. The tides rise and fall, spring 9 feet neap $6\frac{1}{2}$. The cost of the work was \$1,999.99.

During the past fiscal year the sum of \$399.59 has been expended in repairing the wharf and approach and in sheathing the outside and end in order that vessels might lie with safety in the excellent dock on the inside.

NEW HARBOUR.

New Harbour, Guysborough county, is on the southern or Atlantic coast of Nova Scotia, 30 miles to the westward of Canso harbour. It is merely a shallow bay, open to the south-east, at the head of which is the entrance to St. Catherine's river, navigable for boats 5 miles inland.

A contract entered into in May, 1900, for the construction of a breakwater at Black Point, on the western side of the bay, was completed on September 27, 1900.

The breakwater consists of a stone embankment 160 feet in length and 6 feet in average height, between the shore and 'Black Rock,' a stone embankment 89 feet in length and 18 feet in average height in extension of 'Black Rock,' and 150 feet of crib-work 25 feet in width with creosoted substructure and with a talus on the seaward side sloping $1\frac{1}{2}$ to 1 from high water.

The height of the crib-work over 15 feet of its width on the seaward side is 7 feet, and over 10 feet of its width on the inner side, 3 feet 4 inches above extreme high water. The depths at extreme low water, at the inner and outer ends of the crib-work are respectively 6 and $16\frac{1}{2}$ feet.

Spring tides rise 6 feet.

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During a southerly gale in October, 1900, the outer section of stone embankment was nearly destroyed; the crib-work was slightly damaged, and most of the stone in the talus on the seaward side of the crib-work was carried away.

During the fiscal year 1901-02, the sum of \$3,693.04 was expended in repairing the crib-work, and in strengthening it by placing a second 6-inch covering over the covering of the inner 10 feet; in constructing concrete walls, 89 feet in length, 12 feet in width, on top, and 10 feet in average height over the remains of the outer embankment, and 75 feet in length, 8 feet in width and 4 feet in average height over 'Black Rock,' and in slight repairs to the inner embankment.

NYANZA.

Nyanza, Victoria county, is a settlement situated between Middle and Baddeck rivers, on Indian bay, a reach of the Bras d'Or lake, known as St. Patrick's channel, and 7 miles to the westward of Baddeck, the shiretown of the county.

It is a port of call for the steamers of the Bras d'Or Steam Navigation Co., which ply daily, during the season, between the Sydneys and Whycocomagh, and is the shipping place for a large agricultural district.

During the years 1893-94-95, a wharf was constructed, 136 feet long and 20 feet wide, with an L at the outer end 20 by 20 feet, and a road, 153 feet in length was built to connect the wharf with the public road. The wharf is constructed of brush, with faces battering 1 in 6, and is covered with gravel. The depth of water at the outer end, at low lake level, is 12 feet.

As it was found that the wharf had not sufficient space to accommodate the business of the locality, during the last fiscal year, the sum of \$890.29 was expended in widening the inner end of the wharf to the width of the outer end, viz.: 40 feet, by brush work. New fender piles, chocks and cap-timbers were placed in the old work, and the top, as well as the approach were newly gravelled.

OGDEN'S POND.

Ogden's Pond, Antigonish county, is on the south-western shore of St. George's bay, about 13 miles south from Cape George and 9 miles from the town of Antigonish. It is a small sheet of water, about 100 acres in extent, separated from the bay by a sand beach of from 130 to 250 feet in width.

For the purpose of rendering the pond, which has a depth of over 10 feet at low water, accessible to boats and small craft, the sum of \$2,500 was voted for expenditure during 1900-01, towards cutting a channel through the beach and constructing a protection work on the northern side of the entrance.

The proposed cut was 925 feet in length and 30 feet in width at the bottom, extending from 2 feet at low water in the pond to 3 feet of water in the bay, and the protection work, to be 350 feet in length, and to consist of a brush and stone dam, 70 feet long, of pile, brush and stone work, 10 feet wide and 260 feet long, and of a round timber crib-work block, 20 by 20 feet, with creosoted timber substructure.

During 1900-01, the sum of \$2,384.53 was expended in procuring all the materials required for the protection work, and in the construction of the brush and stone dam, 70 feet in length, and of the pile, brush and stone work, 350 feet long.

During the last fiscal year, the sum of \$1,299.49 was expended in the construction of a crib-work block at the outer end of the protection work, 20 by 20 feet, with creosoted timber substructure, and in cutting a channel through the beach, 30 feet wide and 825 feet long, and down to a depth of about $1\frac{1}{2}$ feet below low water.

Spring tides rise 4 feet.

PARKER'S COVE.

Parker's Cove, Annapolis county, is a small indentation on the south-east shore of the Bay of Fundy, 15 miles north-west of Digby Gut, and 7 miles north of Annapolis the county town. The population of the settlement is about 250 people, engaged in farming and fishing.

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In 1883-84, the department constructed a small breakwater, which was substantially built of round log crib-work, stone-filled, 200 feet long, $23\frac{1}{2}$ feet to 26 feet wide on top, and at the outer end 16 feet high, where at high tide there is a depth of about 11 feet of water.

In 1900-01, the department extended the breakwater a distance of 101 feet, at a cost, by contract, of \$3,749. The new block is 26 feet wide on top, and from 16 to 19 feet high, substantially built of round log crib-work, filled with ballast, well fendered and close-sheathed on the seaward side and outer end.

In the present fiscal year, the sum of \$192.50 was expended in placing a quantity of large stone on the eastern side of the breakwater, near its outer end, to prevent the waves from undermining the work.

Spring tides rise about 30 feet.

PARRSBORO'.

Parrsboro', Cumberland county, is situated at the mouth of the Partridge Island river, on the north shore of the Basin of Minas, the south-eastern arm of the Bay of Fundy. It is the terminus of the Cumberland Railway and Coal Co. railway, and an important shipping point for coal and lumber.

For the purpose of enabling steamers to keep up a regular (tidal) ferry service, between Parrsboro' and ports on the south shore of the Basin of Minas, many years ago a landing pier was constructed on the seashore, near Partridge Island, about $2\frac{1}{2}$ miles south from the town. The pier is rapidly decaying, and will in a few years be past repairing. Owing to this, its distance from the town, and the bad condition of the road leading to it, particularly during the spring and autumn, it was thought advisable to construct a new wharf in a more convenient place.

The site selected for the new wharf is on the northern side of the mouth of the river or harbour, as it is called, and is less than a mile from the centre of the town and can be reached by a dry, level road.

On Nov. 2, 1900, a contract was entered into for the construction of the proposed wharf. Work was commenced on June 1, 1901, and was satisfactorily completed on Oct. 8 of the same year.

The wharf has a total length of 375 feet, and is 35 feet wide, and consists of block and span work for a distance of 140 feet; of pile work, 170 feet in length, with an inclined landing on the inner side; and of a crib-work head 40 feet long. All crib-work blocks are constructed with faces of squared timber, laid with 6-in. spaces between them, and the outer faces of the crib-work head were close-sheathed with hardwood timber as a protection against running ice.

The work at the outer end is 31 feet in height, and has a depth of water, at high water springs, of 26 feet, but as spring tides rise 42 feet the whole work is high and dry at low water.

Expenditure for fiscal year up to June 30, 1902, is \$5,723.80.

PARRSBORO' BEACH PROTECTION.

Parrsboro', a town of about 2,500 people, is situate at the right bank of the mouth of the Partridge Island river, which empties into the Basin of Minas on its north side. Parrsboro' harbour is separated and protected from the Basin of Minas by a gravel bar 1,800 feet in length and from 50 to 250 feet wide at l.w.o.s.t. On the outer end of this bar is a lighthouse forming the harbour light. In 1881-82 the Department of Marine and Fisheries built a breakwater, about 400 feet in length, on the outer end and exposed side of this gravel bar. Some few years later this work was extended shorewards a further distance of about 750 feet. The central 450 feet of this work was rebuilt by the Department of Marine and Fisheries in 1885. In 1888 the western 225 feet was repaired by the Department of Public Works at a cost of \$370. In the spring of 1900 this work was practically destroyed, and during the fiscal year 1900-01 the department expended the sum of \$5,000 in reconstructing this work, and in the present fiscal year have expended an additional sum of \$1,510.67.

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PARTRIDGE ISLAND PIER.

This pier, formerly known as Parrsboro' Pier, is situate on the north shore of the Basin of Minas, about one mile to the south-west of the lighthouse at the entrance to Parrsboro' Harbour. It is 2 miles south of the village of Parrsboro' and has been the landing place for the steamers of the St. John, New Brunswick and Basin of Minas route which call regularly during the season. It was built by the provincial government in 1864-66 and has subsequently received frequent and extensive repairs from this department. Being directly on the seashore it is much exposed to south-east gales, though slightly protected by the headlands of Partridge Island on the west, though its chief source of danger lies in the heavy floating ice which in the spring is carried backward and forward on the ebb and flood. This work is 431 feet in length and from 27 to 29 feet in width on top. The present height at the outer end is 33 feet. It was originally built of square timber close-faced cribwork, fully ballasted. On the inner side of the outer end is a narrow inclined landing $7\frac{1}{2}$ feet wide, for the convenience of landing passengers and freight at all stages of tides. Spring tides rise about 41 feet, and neap 34. Low water mark is about 100 feet beyond the end of the wharf. In 1900-01 the sum of \$497.09 was expended in renewing about 175 feet in length of the covering a height of 4 feet of the top for a length of 100 feet and putting in 100 tons of ballast and 24 fenders on the seaward side. During the last year the sum of \$599.85 was expended in completing repairs to this work. The work was replanked, restringered and recapped, from 90 to 100 tons of ballast was put in, and 43 three-cornered upright fenders were put in place on the seaward side to prevent it from bulging out and collapsing. A new pier has been built at the mouth of Parrsboro' harbour and the usefulness of this old pier is now practically nil.

PEREAUX.

Pereaux is a rich and prosperous agricultural district, with a population of some 300 or 400 people, situated on the west side of the Basin of Minas. From Kingsport to Cape Blomidon, is a thickly-settled and fertile agricultural and fruit-growing district.

In the present fiscal year the sum of \$662.49 was expended in beginning the construction of a pile wharf for the purpose of shipping fruit, farm produce, &c., and the landing of coal and general merchandise. The work, when completed, will be a pile structure, 180 feet long, 25 feet wide, and at the outer end, 20 feet high, where at high water there is a depth of 17 feet.

PETIT DE GRAT.

Petit de Grat Inlet, Richmond county, lies between Petit de Grat island and the eastern extremity of Isle Madame. The main entrance is at the southern end, from the Atlantic; the northern entrance, from Rocky Bay is obstructed by outer and inner bars, through which passages for boats at ordinary low water, were opened by the department between 1879-82.

In 1898-99, both channels were widened and improved, by hand dredging, and a crib-work protection, 10 feet in width for a distance of 189 feet, and 17 feet wide at the outer end, for a distance of 21 feet, was constructed on the western side of the outer channel, or to within 85 feet of its outer end.

In 1899-1900, the protection work was extended inwards a distance of 88 feet, and the whole was raised 10 inches in height, and the outer channel was further improved.

During 1900-01, the sum of \$500 was expended in raising the protection work (excepting the outer 21 feet) a further height of $2\frac{1}{2}$ feet; in placing a talus of stone at the back of the protection work, and in deepening the inner portion of the outer channel.

At the end of June, 1901, the outer channel was about 350 feet long, 25 feet wide, with a depth of 2 feet, at low water springs, while the inner was 285 feet long, 20 feet wide, and with the same depth as the outer channel. The protection work, 298 feet in length and constructed of ordinary round timber crib-work was fully ballasted,

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but not covered. For a distance of 277 feet it is 10 feet wide, 6 feet 10 inches in height, with the top 8 inches below high water springs, and for the remaining distance of 21 feet it is 17 feet wide, 9 feet in height, and $1\frac{1}{2}$ feet above high water springs.

The sum of \$1,000 was appropriated for expenditure during 1901-02, in the reconstruction of the protection work, and for deepening the channels; but as it was found that the beach on the eastern side of the outer channel was moving rapidly to the westward, and was already encroaching upon the channel, and the amount authorized was not sufficient to stop the movement, the amount was not expended, the abandonment of the work is recommended and the opening of a new channel to the eastward of the present one.

Spring tides rise 6 feet.

PICTOU ISLAND.

Pictou Island is situated in the Strait of Northumberland, about 10 miles north-east of the entrance to Pictou harbour.

There are two wharfs on the south side of the island, one near the west end, and one known as the 'East Wharf,' near the centre. The west wharf is 324 feet in length and 20 feet in width (with the exception of the inner 55 feet, which is 12 feet wide) and has an L 30 by 20 feet on the east side at outer end. The east wharf is 328 feet long and 20 feet wide. The depths at extreme low water at the outer ends of the east and west wharfs are respectively 4 feet 6 inches and 4 feet 9 inches.

Spring tides rise 6 feet.

During the fiscal year 1901-02, the sum of \$609.60 was expended in repairing the east wharf. The repairs effected included: renewing the floor stringers, covering and guard rails of the centre 61 feet, and the floor stringers, covering, guard rails and sheathing of 109 feet, 121 feet from the outer end inwards, and replacing about 300 cubic yards of ballast in the outer 61 feet, and in the 109 feet section.

PICTOU LIGHT BEACH.

The beach forming the southern side of the entrance to Pictou harbour, known as Pictou light beach, extends about one mile in a northerly direction, inclosing Moodie Cove, an inlet nearly dry at low water, except in a central channel. The outer end, on which stands a lighthouse and keeper's dwelling, is protected by a breastwork of squared timber, 450 feet in length, and by a work of brush and stone extending from side to side of beach, opposite the southern extremity of the breastwork, and inclosing property under the control of the Department of Marine and Fisheries.

In 1894-95, the sum of \$300 was expended in acquiring a title to a portion of the beach, 1,520 feet in length, adjoining the property of the Department of Marine and Fisheries.

During 1898-99, a brush and stone work 1,030 feet in length, 10 feet wide and 4 feet in height was constructed along the beach to prevent its wearing away by the action of the seas during gales; and two groins, respectively 65 and 55 feet in length composed of piles, brush and stone, were built off the brush and stone work for the purpose of gathering the sand.

In 1900-01 the sum of \$522.77 was expended in the construction of a third groin, 75 feet in length, opposite the end of the breastwork built by the Department of Marine and Fisheries, and 200 feet to the northward of the first groin, and in slight repairs to the brush and stone work: but the groin completed in November was undermined and destroyed during a heavy easterly gale early in December, 1900.

During the last fiscal year the sum of \$608.28 was expended in raising the brush and stone work, which had settled, for a distance of 710 feet, and as it was found that the beach south of the end of the work was wearing away, the protection work was extended for a distance of 120 feet. The extension consists of brush and stone work, 10 feet wide and of an average height of 4 feet.

Spring tides rise 6 feet.

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PINCKNEY'S POINT.

Pinckney's Point is a small fishing and farming settlement of about 150 people, situated near the extremity of the headland between Chebogue river and Little river, about 12 miles S.S.W. of the town of Yarmouth.

In the present fiscal year the department expended the sum of \$998.73, in constructing a small breakwater wharf for the purpose of affording some measure of protection to the fishing boats, and to serve as a landing wharf for an occasional schooner load of general merchandise, for local consumption.

The work consists of a block of round-log cribwork, 20 feet square, 14 feet high, with an approach 93 feet long, 20 feet wide and from 4 to 13 feet high, built of stone and walled up on each side with split boulders.

The outer edge of the crib-work is at low water mark.

Spring tides rise 12 feet, neaps 11 feet.

PLYMOUTH.

Plymouth is a small but thriving farming and fishing settlement of some 300 people, situated on the west side of Tusket river, near its mouth, about 6 miles south-east of the town of Yarmouth.

A small wharf was built by the inhabitants many years ago, for the accommodation of fishing craft and small vessels loading fish and general farm produce and landing sea manure. Being so far dilapidated as to no longer serve the public need, the department, in the present fiscal year expended the sum of \$488.21 in building a new wharf of pile-work, 61 feet long, 25 feet wide and from 6 to 9 feet high, with an approach, of gravel covered embankment, 100 feet long.

Spring tides rise 13 feet, neaps about 10 feet.

POIRIERVILLE.

Poirierville, Richmond county, commonly known as Lower Descousse, is a thickly-settled district of Isle Madame, on the southern side of Lennox Passage, a strait separating the island from the mainland, and connecting St. Peter's bay with the Straits of Canso.

The sum of \$3,000 was voted for expenditure during the last fiscal year, towards the construction of a breakwater at this place, and instructions were given to prepare contract plan and specification for the work; but as no official information with regard to the locality and its requirements had ever been obtained, the necessary information had to be sought before a plan of the proposed work could be prepared.

A survey was made in Sept., 1901, and a plan and report on the construction of the proposed work, together with an estimate of its probable cost, amounting to \$50,000 were submitted to the department on Feb. 5, 1902.

The breakwater asked for, is for the protection of the anchorage from the heavy undertow which sweeps into the bay, around Cape Le Ronde, during south-easterly gales, and as the mouth of the bay is very wide, it would require a great length of breakwater to effect the improvement desired.

Owing to the large amount needed for the work, the sum voted was not expended.

PORTER'S LAKE.

Porter's lake is a long and narrow strip of water, lying nearly north and south, situated about the middle of Halifax county, or about 15 miles east of the provincial capital. It is about 17 miles in length, from a quarter to half a mile in width, and the water being of good depth for almost its entire length, it is navigable for vessels of 60 tons or less, to the extreme head. The normal level of the lake is some two or three inches above high water mark o.s.t., which on the coast here rise 6 feet; neaps 5 feet.

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Up to about 1873, the outlet, which was direct into the Atlantic through a gravel beach, about 200 feet wide, was navigable for schooners drawing 6 feet of water, and a considerable traffic was then done on the lake in the export of timber, lumber, cordwood, general farming produce and fish. Since that time the outlet has been gradually and permanently filling up with the accumulations of gravel washed in by southerly and easterly storms. In order to maintain the outlet, to prevent the roads along the margin of the lake from being flooded, also to admit fish into the lake, the following small expenditures have been made by the department. :—

1881-82.....	\$ 200 00
1884-85.....	200 00
1889-90.....	200 00
1892-93.....	147 00
1897-98.....	100 00
1898-99.....	200 00
1899-1900.....	150 00
Total.....	\$1,197 00

These expenditures having resulted in but slight temporary and no permanent improvement, the department in 1900-01, expended the sum of \$8,262.44, in beginning the construction of a permanent channel through the neck of land, 2,400 feet wide, separating the main body of the lake from the extreme head of Three Fathom Harbour. In 1901-02, a further sum of \$5,987.24 was expended in continuing the work.

PORT GEORGE.

Port George Annapolis county, is a village of some 400 people, situated on the south shore of the Bay of Fundy, 37 miles north-east of Digby Gut, 42 miles south-west of Scott's Bay, 6 miles south-west from Margaretville, and 7 miles north-west from Middleton on the Dominion Atlantic Railway.

Some years before Confederation the provincial government built a western breakwater and an eastern pier or wharf. The breakwater is 440 feet long, from 25 to 35 feet wide on top, and at the outer end, where there is about 21 feet of water at h.w.o.s.t. it is 25 feet high. It is built of round log, stone-filled, cribwork, the western or seaward face and outer end being close-sheathed.

The wharf on the eastern side of the little harbour is 205 feet long, 20 feet wide, and is 18 feet high at the outer end. It is built of round log crib-work, and the outer end, on which stands a small lighthouse, is close sheathed. In 1874 the harbour was taken in charge by the Public Works Department, and in that and the following year the sum of \$7,000 was expended in repairing and refacing the breakwater, which was much decayed. In the autumn of 1888, the outer end of the breakwater was destroyed by a severe storm, 165 feet in length being wrecked and an additional length of 30 feet injured. Before repairs could be made, a second storm destroyed the damaged portion, leaving 195 feet of the work a complete wreck, and rendering the harbour practically useless. In 1900-01 the destroyed portion of the work was rebuilt.

In April, 1894, an exceptionally severe north-east gale caused a serious breach in the breakwater at about midway of its length, or immediately shorewards from the new outer block; the breach was 40 feet long for the full width of the work, and about 17 feet high. It was rebuilt in the autum of the same year.

Spring tides rise 30 feet.

In 1900-01, the sum of \$400 was expended in repairing the eastern breakwater wharf. The sum of \$1,653.60 was also expended in the construction of a detached breakwater, lying about 200 feet eastwards from the end of the main work. The object of this is to break the seas. and afford a much needed shelter to schooners lying alongside the breakwater.

In the present fiscal year the sum of \$3,743.92 was expended in continuing the construction of the detached breakwater begun the previous year. The work, so far,

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built, is 102 feet long, 32 feet high at the lower end and 26 feet high at the upper, 20 feet wide on top. It is plumb on the seaward face and batters 1 in 4 on the back.

PORT HASTINGS.

Port Hastings, Inverness county, is on the eastern side of the Strait of Canso, $2\frac{1}{2}$ miles to the northward of Port Hawkesbury.

The sum of \$2,000 was appropriated for expenditure in 1901-2, towards an extension of the wharf, but no action was taken, it having been ascertained that it was the intention of the Inverness and Richmond Railway Co. to construct a coal shipping pier which will interfere with the extension as proposed and necessitate a re-survey.

PORT HAWKESBURY.

Port Hawkesbury, Inverness county, is on the eastern side of the Strait of Canso, nearly opposite Port Mulgrave.

The sum of \$2,000 was appropriated for expenditure in 1901-2, towards the construction of a wharf. During the year a survey was made, and a plan and specification prepared for a proposed reconstruction of a wharf known as the 'Long wharf'.

Expenditure to June 30, 1902, \$35.54.

PORT HILLFORD.

Port Hillford, Guysborough county, is at the head of Indian bay, on the southern or Atlantic coast of Nova Scotia, 5 miles to the eastward of the mouth of St. Mary's river.

For the purpose of forming a harbour, in September, 1899, a contract was entered into for the construction of a breakwater on the east side of, and near the head of the bay. The work under contract was 300 feet long and 22 feet wide, with an L, 22 by 22 feet on the northern side of the outer end; constructed of open-faced, native timber cribwork, and protected on the seaward side and outer end by hardwood close-sheathing.

The work was commenced on May 8, 1900, and at the end of the fiscal year, about one sixth of the work under contract had been done. It was completed in September, 1900.

Some settlement of the seaward side of the work took place, by scour, during a gale on August 14, 1900, and an agreement was entered into with the contractors for placing 200 cubic yards of compressed brush and 440 cubic yards of stone on the seaward side and at the outer end, to prevent further scouring. This extra work, involving an expenditure of \$920, was commenced on October 3, and completed on November 14 following.

While the extra work was in progress, a further and very serious settlement took place, during a gale on October 11. The settlement was from 3 feet at the inner, to 6 feet on the outer end, and $8\frac{3}{4}$ feet at the north-east corner of the L, and very irregular.

During the last fiscal year, the sum of \$2,724.05 was expended in raising the work to its original height.

The depth of water, at low water, at the outer end is 9 feet.

Spring tides rise 6 feet.

PORT HOOD.

Port Hood, the shire town of the county of Inverness, is on the west coast of Cape Breton Island, twenty miles north of the northern entrance to the Strait of Canso.

The harbour was formerly a secure one, Smith Island, which forms its west side, having been connected with the mainland by a range of sand hills. In 1839 the sea made a breach through this protection; the opening, at first narrow, was enlarged by the tidal currents with increasing rapidity, until it was entirely swept away. The harbour is now unsafe during northerly gales, except in a small cove on the east side of Smith Island.

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A pier on the east side of the harbour, commenced by the provincial government in 1865, was originally 550 feet in length and 24 feet in width, with an L on the south side of the outer end 100 feet in length and 25 feet in width. It came under the charge of the federal government in 1871, since which time extensive repairs and renewals have been made, including the construction of a new block 125 by 25 feet at the outer end in 1873; the construction of a block 50 by 32 feet at the south end of the L in 1888-89, and the construction of a block 71 by 24 feet at the outer end in 1889-90. The old provincial government work was of square timber, close-faced; the additions and parts reconstructed by the department are of round timber, laid open-faced. The pier has been protected on the seaward side, at the outer end, and on the south end and inner side of the L, by close-piling, and on both sides to within 74 feet of the outer end, by a stone talus.

During the fiscal year 1901-2, the sum of \$1,237.36 was expended in completing the close-piling and the renewal of the covering of the outer end, or head of the pier; in replacing ballast at the outer end, and in repairing and reballasting a portion of the seaward face near the outer end.

The depth at low water at the outer end is from 12 to 15 feet.

Spring tides rise 4 feet.

PORT JOLI.

This is a settlement of about 400 people situate about twelve miles south-west of Liverpool Town. In the fiscal year 1897-98 the sum of \$300 was expended in building a couple of blocks of cribwork from the channel shorewards. In the year 1898-99 the work was extended to the shore at a cost of \$1,195.91, and, besides its extension to the shore, another block was added to the head of the wharf and on its inside. The work as it then stood was 207 feet long, $12\frac{1}{2}$ feet wide, and had an average height of 9 feet, whilst the extra block at its head was 18 feet long, $12\frac{1}{2}$ feet wide and 12 feet high at its outer end. Owing to its being constructed upon the sand without adequate foundation, the work began to settle on the outside and gradually became so inclined on its outside face as to endanger the entire structure.

During the last fiscal year the sum of \$497.08 was expended in repairing and partially rebuilding this work. The covering, planks, guards and stringers were removed and seven pile trestle bents were driven between the spans to afford the necessary support, so that it now rests almost entirely upon these trestle bents.

PORT MAITLAND.

Port Maitland, Yarmouth county, is a prosperous and important fishing and farming village, with a population of about 400, situated on the south-east side of the mouth of the Bay of Fundy, 12 miles north of the county town of Yarmouth.

The harbour works were begun about the year 1859, by the provincial government; they consist of an eastern and western or main, breakwater of cribwork. The former is 400 feet long by some 20 feet wide, and the latter 500 feet long, 22 feet to 25 feet wide, with a return of 54 feet long, 24 feet wide and 27 feet high, along which there is a depth of 19 feet at h.w.o.s.t. These breakwaters, or piers, enclose between them a snug high-water harbour of $2\frac{1}{4}$ acres in extent.

In 1873-4, the eastern breakwater was raised and widened for a length of 158 feet on the shore end and an extension 50 feet in length was built on the outer end of the western breakwater. In 1885-6, the sum of \$349.92 was expended in raising the outer end of the eastern breakwater, and in repairing and partly renewing the sheathing of the outer face of the western breakwater. During 1887-8, the western breakwater was repaired and in the following year, 1888-9, both sides of a breach were closed up, and a number of fender-piles were driven along the outer face and exposed corners of the broken work.

On June 24, 1890, a contract was made for rebuilding the destroyed section and repairing the other parts of the work. The seaward face i. e. 83 feet in length outside the new work, and 100 feet between it and the shore, was close-piled; the entire top

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was rebuilt, and new fenders were fitted to the inside face. In 1891-2, the sum of \$298.45 was expended in repairing the eastern breakwater, and in 1896-7, extensive repairs and renewals were made to both works. On the eastern breakwater, which also serves as a wharf for the landing and loading of general merchandise, coal, lumber, etc., the shoreward 30 feet was rebuilt on the south side, 6 logs high and on the north side 3 logs high, including floor-stringers and covering; 22 feet in length of the new covering was laid on the outer end, and a number of new fenders were bolted into position. On the western breakwater, a re-enforcing block was built on the south side of the outer end, 97 feet long, 11 feet wide, and 12 to 14 feet high, or to a height of about 10 feet below the floor of the work; a re-enforcing block was also begun along the whole length of the ell 70 feet in length and from 10 to 12 feet wide. To obviate settlement, due to soft bottom, and the eating away of the bottom logs by the limnoria, it was built on 147 piles, driven to hard bottom and cut off level with the beach. The inner or north side of the shoreward end was also strengthened and rebuilt. In 1897-8, further repairs and renewals to the breakwaters were made, the re-enforcing block along the ell of the western breakwater was completed to the full height of the work, and the inner face of the outer end was renewed. The buttress on the outer side was extended shorewards a length of 122 feet. On the end of the eastern breakwater the T was rebuilt 50 feet long, 20 feet wide, and built on 21 piles, driven to hard bottom and cut off level with the beach. Various miscellaneous repairs were also effected.

In 1898-9, the thorough and extensive repairs to the western breakwater were completed and 60 feet long on the inner face, was close sheathed, the buttress on the seaward side, 140 feet long, was finished and several vacant spaces in the shoreward end were filled with ballast.

In 1899-1900, the re-enforcing buttress on the outer end seaward face of the breakwater, 96 feet long, 10 to 12 feet wide, to the full height of the work was rebuilt. The lower 12 feet of this work, and the outer end of the work, were also sheathed with 4-inch creosoted plank as a protection against the limnoria.

In 190-01, a piece of buttress on the seaward side of the breakwater, 90 feet long, 19 to 20 feet high, and from 10 to 11 feet wide, adjoining shorewards the piece 96 feet long, that was built last year, was constructed. The outer face of the new piece of buttress was also sheathed 12 feet high with creosoted 4-inch plank, as a protection against the limnoria.

During the present year the sum of \$299.44 was expended in close-sheathing with 5-inch plank a length of 110 feet of the shore end of the seaward face of the breakwater from which the old sheathing had been stripped by heavy seas earlier in the year.

Spring tides rise 18 feet, neaps 15 feet.

PORT MEDWAY.

Port Medway is a village of about 700 people on the south side of Port Medway bay, about three miles from its mouth and about 11 miles north-east from Liverpool town. In 1875-76 beach protection works were constructed on the beach near Foster's point. The works consisted of two pieces of round log stone-filled cribwork, the south piece being 240 feet in length, 10½ feet wide on top and about 6½ feet high, the north piece being 450 feet long, 11 feet wide on top and from 6 to 9 feet in height. This work cost \$4,513.50. In 1880 the sum of \$214.73 was expended in repairing portions of the northern piece. In 1890 another small sum was expended in repairing part of this work and replanking about 150 feet of the old work. In 1894 the sum of \$350 was expended in thoroughly repairing the northern piece, consisting of the virtual replacing or rebuilding of 90 feet of the northern piece and general repairing of the whole work. In the year 1900 the sum of \$485.71 was expended in making repairs to the southern portion of this work. These repairs consisted of removing 120 feet in length of the old work and rebuilding it, also the construction of a rip-rap wall on its outside in which about 120 tons of large stones was placed.

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During the last fiscal year the sum of \$370.61 was expended. From the south portion of this work 150 feet in length was renewed for its total width and four feet in height; an additional length of 70 feet of its front half was renewed to the same height.

PORT MOUTON.

Port Mouton is the centre of several small villages with an aggregate population of about 1,200 and is situated about 10 miles south-west of Liverpool town. About 20 years prior to Confederation the government of Nova Scotia constructed a wharf and kept it in repair till that event. Since that time owing to the fact that all public works passed under the control of the Federal Government and no formal transfer was made of this wharf, no repairs whatever were made, so that the destructive work of the storms and the natural decay of years completed the demolition of this entire work. During the fiscal year 1899-1900 the sum of \$1,972.49 was expended on the reconstruction. The wharf then consisted of a rock bank approach, 56 feet long, 35 feet wide on top and 8 feet high at its outer end, and a cribwork stem. This stem consisted of 4 round log, stone-filled cribs, each 28 feet, 25 feet wide and separated from each other by 15-foot spans. During the last fiscal year the sum of \$363.93 has been expended in constructing an additional block. This block is of round log, stone-filled cribwork, 20 feet long, 25 feet wide and 15 feet high at the outer end. It is separated from the former head of the wharf by a span 20 feet in length and the whole is well capped, planked and stringered as well as fendered.

PORTUGUESE COVE.

Portuguese Cove is a small fishing village with a population of about 600 people, situated six miles south-south-east from Halifax, on the western side of the mouth of the harbour.

In the fiscal year 1901-02 the department expended the sum of \$199.88 in laying some boat skids to enable the fishermen to haul their boats up on the beach in stress of weather. The skids consist of four lines, about 70 feet long, of spruce logs, securely bolted to the solid rock, about 10 feet apart, laid at right angles to high water mark with smaller logs, or poles, bolted to them at intervals of about 5 feet.

RAGGED HEAD.

Ragged Pond, Guysborough county, on the north side of Chedabucto bay, about 6 miles east of Guysborough harbour, is a triangular sheet of water with an area of about 180 acres and a depth of from two to five fathoms. It is enclosed by shingle beaches, through which there is a narrow channel on the western side of Ragged Head.

During the years 1878-83 the channel was improved and protection works, consisting of 110 feet of cribwork and 428 feet of brush and stone work, were constructed on the southern side. In 1899-1900 and 1900-01 small amounts were expended in repairing the inner 50 feet of the cribwork and in deepening and reopening the channel.

The sum of \$1,000 appropriated for expenditure in 1901-02 was not expended.

The surface of the pond is 3 feet higher (at low water inside) than low water outside; consequently there is a fall at low water of 3 feet in the length of the channel (600 feet). The depth in the channel at low water is about 3 feet, except near the entrance, where it is about 1 foot.

Spring tides rise 6 feet.

RIVER HEBERT.

River Hebert, is a tidal stream in Cumberland county, flowing northward into the Chignecto channel, Bay of Fundy, at the head of Cumberland basin.

For the purpose of affording shipping and landing facilities to the inhabitants, during 1898-99-1900, a pile wharf, 82 feet in length and 53 feet in width, was

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constructed on the western side of the river, at a cost of \$1,447.80. The depth of water along the channel face is only 14 feet, but it increases to 17 feet at 10 feet from the face.

The distance from the wharf to the public road is 320 feet, and when the work was constructed it was thought that the top of the clay bank could be utilized as a road, but as during high spring tides, the water overflows the bank, causing the clay to become soft and sticky, and the passage of teams over it, was rendered almost impossible, during the last fiscal year, the sum of \$379.50 was expended in the construction of a road to connect the wharf with the public road, 270 feet in length, including a bridge on posts, 56 feet long, over the timber sluice, which carries the lumber from the mills to the deal wharfs. The road is constructed with brush, poles and clay, and is 4 feet above extreme high water spring tides.

RIVER JOHN.

River John, Pictou county, empties into the head of John bay, on Northumberland Strait, about 24 miles to the westward of the entrance to Pictou harbour. It has a depth of about 3 feet at low, and 11 feet at high water spring tides over the bar at the entrance, and from 3 to 11 feet, at low water, in a very narrow channel, up to the bridge, a distance of nearly a mile. The village is situated on either side, of the river, near the bridge, and about $\frac{3}{4}$ of a mile from the station on the Oxford and Pictou branch of the Intercolonial Railway.

The sum of \$2,000 was appropriated for expenditure during 1899-1900, in connection with the construction of a wharf at River John, but of the amount voted the sum of \$449.94 only, was expended, and that in the purchase of the land required. The creosoted timber required in the construction of the wharf was ordered, but not delivered at the end of the fiscal year.

During 1900-01, the sum of \$1,697.41 was expended in procuring nearly all the materials required for the proposed work, and in completing the construction of about two-thirds of the same.

During the last fiscal year the sum of \$525.81 was expended in completing the work.

The wharf is on the south side of the river, immediately below the highway bridge, and consists of a pile-head 60 by 20 feet, with a cribwork retaining wall 60 by 10 feet at the back of it, and wing walls of cribwork on either side, 10 feet wide and respectively 78 and 61 feet in length; the area enclosed by the retaining walls and the shore, is filled with clay and covered with gravel, and a road has been constructed along the side of the bank, between the wharf and the highway. The depth of water along the channel face, at low water, is 9 feet.

Spring tides rise 8 feet.

ROUND BAY BEACH.

Round Bay beach is about three miles east of Negro harbour and thirteen miles south of Shelburne town. The beaches of this bay which are composed of fine white sand formed a protection to several small coves on its northern side which in turn formed boat harbours of refuge. This fine white sand is continually blowing away and from time to time breaches are effected through the beach by the many storms which occur along this coast, so that the outlets of these little boat harbours are practically destroyed. The department has from time to time made several small expenditures of \$100 and \$50, in placing brush along the line of the top of the beach to catch this drifting sand. This kind of work has in the past proved temporarily successful, but when the spills become detached from the branches so that the sand meeting with little resistance escapes from the enclosure new breaches are effected in the tidal mounds thus rendering the boat harbours useless and unprotected. During the last fiscal year the sum of \$496.74 has been expended in repairing this beach which had been almost utterly destroyed by the previous seasons storms. The work built was 850 feet in length constructed as follows:—

The first 100 feet in length was built of round-log stone-filled open cribwork 8 feet wide and to a height of 6 feet above the level of the beach whilst the remaining 750

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feet was constructed similar to the work at Lockeport of a double line of posts, separate 8 feet, the seaward side being planked with two-inch plank and the inner with one-inch boards. The posts were sunk five feet in the sand and were five feet above the level of the beach. This work was partially destroyed shortly after its construction in a heavy storm, but the cribwork part and about $\frac{1}{3}$ of the fencing remain.

SANDFORD.

Sandford, Cranberry Head, is situated on the Atlantic coast of Nova Scotia, at the extreme western point of Yarmouth county, 7 miles north-west from the town of Yarmouth. The settlement in the neighbourhood, which has for years been known as Sandford, has a population of from 300 to 400 people engaged in fishing and farming.

In 1858 a breakwater was begun by the inhabitants, aided by the provincial government. In 1876 the sum of \$2,000 was expended by the department in extending the work 150 feet. In 1878-9 the sum of \$1,000.08 was spent in constructing an additional length of 50 feet and in repairing the older portions. In 1880 repairs were made. In 1883-4 and in 1885-6 some slight repairs were made. In 1887-8 miscellaneous repairs were made. In February, 1892, two serious breaches were made in the work by heavy gales and a quantity of gravel was driven through into the little boat harbour inside, and in the next two or three years about 300 feet, i. e., the whole work, except the outer block, was destroyed, the remaining piece being 60 feet long, 22 feet wide and from 18 to 20 feet high. Before this date six or seven schooners of 10 to 20 tons each, besides a number of smaller boats, was owned in the place and considerable fishing business was done. Since the destruction of the breakwater, and owing to the consequent lack of shelter, the schooners and most of the boats were disposed of and the fishing industry in the locality practically ceased.

In 1898-9 the sum of \$3,497.25 was expended in partially rebuilding the shoreward portion of the work on a new site and the remaining outer block was also thoroughly repaired. The new work, of which a length of 200 feet was built during the year, starts at the shore, at a point 350 feet eastward of the point where the former work began, and was built in a north-westerly direction towards the outer block of the old work, with which it was connected. Besides the portion of breakwater built during this year, a small boat channel about 40 feet long and 8 feet deep was excavated through the beach under lee of the breakwater, to give access to a salt water pond which forms a valuable shelter for fishing vessels during the heavy gales in the winter season.

In 1899-1900 the rebuilding of the breakwater, begun last year, was completed. The portion of the work built being 81 feet long and 26 feet wide, with an average height of 12 feet. A piece of beach protection work 240 feet long, 10 feet wide and from 6 to 8 feet high was also built in a westerly direction from the shore end of the breakwater, to prevent the seas from driving the gravel beach into the little pond which shelters the boats of the fishing fleet.

In 1900-01 the ballast was replaced.

During the year 1901-2 the sum of \$2,542.18 was expended in extending the breakwater a distance of 90 feet. The new block is 26 feet wide and from 20 to 25 feet high, thoroughly well built of round-log cribwork, close sheathed on the outer end and seaward face, filled with ballast and provided with a break 5 feet high.

SAULNIERVILLE.

Saulnierville, Digby county, with a population of about 250, is situated on the south-east coast of St. Mary's bay, Bay of Fundy, 36 miles south-east of Digby, 32 miles north of Yarmouth and 3 miles north of Meteghan River.

Some years before Confederation a breakwater, serving also as a landing wharf, was built by the inhabitants, aided by the provincial government. In 1876 the sum of \$4,000, of which half was contributed by the department and half by the inhabitants, was expended in making thorough repairs to the work and extending it to a length of 100 feet. In 1888-9 further extensive repairs were made. In 1899-1900 damage done

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by a severe storm in 1900 was made good. In 1900-1 the sum of \$1,999.49 was expended in repairs and extensions; the repairs which were to make good the damage done by a great tide and storm of March 1, 1900, consists of the renewal of the outer 60 feet in length. A new work was built a length of 37 feet; it is substantially built of round-log cribwork, close-sheathed on the seaward side and outer end, 33 feet wide and from 20 to 24 feet high.

The breakwater has now a total length of 505 feet. At the outer end h.w.o.s.t. there is a depth of about 14 feet of water.

During the fiscal year the sum of \$719.97 was expended in reflooring the shoreward end of the breakwater for a length of 138 feet.

Spring tides rise 21 feet, neaps 18 feet. At low water the sand flats are bare for several hundred feet beyond the end of the work.

SCOTT'S BAY.

Scott's Bay, King's county, is on the south side of Minas Channel, Bay of Fundy, between Cape Split and Baxter's Harbour. The population of the settlement, within a radius of a couple of miles is about 500.

In 1878-9 the department built a block of cribwork 50 feet long, 30 feet wide and about 20 feet high, connected with the shore by a double row of close-piling, 210 feet long, from the south-east corner of the block; the cribwork was built of close-faced work, well fendered and ballasted. The work was located on the west side of Jess Creek, and formed a harbour or shelter for vessels during south-west storms.

As it had no floor much of the ballast has been removed, presumably for ballasting schooners. Both the block and the close-piling are more or less dilapidated, 30 feet in length of the close-piling being totally destroyed. The expenditure on this block and the close-pile work by the department in 1867-1882 was \$3,000.

In 1900-01 the department expended \$500 in building two blocks of cribwork, one on either side of the mouth of the creek. The northern block is 115 feet long, 10 feet wide, and from 6 to 8 feet high. Both blocks are of round log, stone-filled cribwork.

In the present fiscal year the sum of \$2,026.71 was expended in extending the northern breakwater by a block of substantially built cribwork, 55 feet long, 15 feet high and 19 feet wide; also in extending the south breakwater by a block 75 feet long, 10 to 12 feet high and 12 feet wide. Some minor repairs were also made to the older portions of the northern breakwater.

SIGHT POINT.

Sight Point, Inverness county, is on the west coast of Cape Breton Island, 7 miles to the northward of the entrance to Mabou harbour.

In 1900-01 the sum of \$500 was expended in constructing a cribwork 24 feet in length and 17 feet in width on top, in from $2\frac{1}{2}$ to 4 feet at low water—to form part of a small breakwater to shelter a landing place for boats—and in procuring some of the materials required for an extension outwards of 22 feet in length.

During the fiscal year 1901-02 the sum of \$499.76 was expended in procuring the balance of the material and in completing the 22 feet extension; in completing the sheathing of the 24 feet block, and in constructing a rough work 24 feet in length between the inner block and the shore.

Spring tides rise 4 feet.

SMITHVILLE.

Smithville is a small fishing village situate about 13 miles south-east of Barrington Passage. The harbour is connected with the ocean by a creek about a quarter of a mile in length and from 200 to 300 feet in width, which has been very difficult to navigate owing to the presence of large rocks and small ledges in the centre and sides of the channel. The number of boats employed at this place is about 40, from half a ton to 8 tons register.

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During the last fiscal year the sum of \$853.75 has been expended in removing rock from the channel. The rocks were all from two to three feet below the surface of low water, consequently divers would have to be employed to do this work.

There is now a depth of water in all parts of the channel of from $4\frac{1}{2}$ to 5 feet, allowing small boats and vessels to navigate the channel at practically any time and tide.

STONY ISLAND.

This is an important fishing station on the east side of Cape Sable Island, about midway between Cape Sable and North-east Point. The island itself has an area of about 3 or 4 acres and is distant about 300 feet from the main shore with which it is connected by a bar of sand shingle which is bare at l.w.o.s.t. In order to protect the existing boats the department built a breakwater on the inside shore of this island in the year 1891-2 at a cost of \$4,800. This work for 180 feet of its length, next the shore, is built of solid stone-filled cribwork with a break on its eastern or seaward face 4 feet in height. It is 24 feet wide on top and at the outer end 22 feet high. The outer 60 feet in length of the breakwater consisted of pile-work, the bents being 12 feet apart and having each 6 piles. Along the seaward face close-piling was originally driven, but this affording too much resistance to the sea was destroyed during the following winter. This work did not protect the boats as intended owing to its bad situation, so that many seeking shelter for their boats, during stormy weather, had them destroyed. I would recommend strongly the entire abandonment of this work and in the future would advise the opening of a small pond in the immediate vicinity of this island with cribwork protection walls to serve as a harbour of refuge for the numerous small boats fishing in that vicinity. This work would cost from \$2,500 to \$3,000.

SYDNEY QUARANTINE WHARF.

The quarantine station in Sydney harbour is on the southern arm of the harbour, near Keating Point, and about $\frac{3}{4}$ of a mile south of Point Edward at the extremity of land lying between the south and west arms.

A wharf built by the Marine and Fisheries Department for landing purposes in connection with the quarantine station, was repaired and extended by the Public Works Department in 1892-93. It was originally a block and span structure 14 feet wide, extending 126 feet to 7 feet 6 inches at low water. The extension consists of a cribwork 22 feet in line of work by 39 feet 6 inches. The depth, at low water, at the outer face of the extension is 9 feet.

Spring tides rise 5 feet.

TANCOOK.

Big Tancook island is the largest of a host of small islands in Mahone Bay, on the coast of Lunenburg county. It is about $2\frac{1}{2}$ miles in extreme length north and south, by about a mile in extreme width east and west. It is nine miles north-east of the town of Lunenburg; the same distance south-east from Chester, and about $2\frac{1}{2}$ miles south-west of the Aspotogon peninsula, which is the nearest mainland. The island has a population of about 600 people, for the most part dependent on fishing, but doing a considerable amount of farming in the way of raising early vegetables.

The breakwater, which is situated on the north-western side of a large cove on the northern end of the island was built in 1873, at the joint expense of the Department of Public Works and the Provincial Government, each having expended \$2,000. It is 200 feet long, with a spur at its outer end, having a face length of 95 feet, and is built partly of piles and partly of cribwork, the first 165 feet being of cribwork, and the remainder, including the spur or ell, of piles. In 1887-88, repairs and renewals were effected. In 1899-1900, thorough repair and renewals to the cribwork portion of the structure were made.

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During the present fiscal year, the department expended the sum of \$936.48 in completing repairs to the wharf begun last year. The new work consists of the renewal of the pile-work in the outer portion of the wharf and the reflooring of the whole outer end and ell.

THREE FATHOM HARBOUR.

Three Fathom is an irregular shaped inlet of the sea, about one mile in maximum length, from north to south, by one quarter to three quarters of a mile in width. It is situated about 15 miles east of Halifax harbour. The harbour is much used and frequented by fishermen from the contiguous settlements of Seaforth, east and west Chezzetcook, containing, in the aggregate, a population of some 500 or 600 people. To prevent the sea from breaking through the narrow shingle beach that separates the harbour from the Atlantic, the department in 1878 constructed cribwork along the crown of the beach. Its original length of 1,050 feet has been extended to 1,085 feet, its height is from 4 to 8 feet and its width 13 feet. It is built of round log cribwork, well fendered and ballasted.

During the fiscal year the sum of \$1,189.91 was expended in taking down and rebuilding a length of 120 feet, on the northern end of the work, which was in a state of dilapidation.

TIDNISH.

The Tidnish river enters Bay Verte on the southern side of, and near its head. It is the largest stream entering the bay, and for a short distance from its mouth, it forms the boundary line between the counties of Westmoreland, in New Brunswick and Cumberland, in Nova Scotia, the western shore being in the former, and the eastern in the latter province.

During 1890-91, a wharf 220 feet in length, with an L 20 by 20 feet on the upper side of its end, was constructed on the south-eastern side of, and near the mouth of the river, in Cumberland county, at a cost of \$2,164.45.

The amount voted for the past fiscal year was not expended.

TRACADIE (EAST).

Tracadie, Antigonish county, is on the southern shore of St. George's bay, 12 miles east from Antigonish harbour, and 11 miles west from the entrance to the Strait of Canso. It is separated from the bay by a series of islands and connecting beaches of sand and gravel. Formerly the entrance was to the westward of Delerey island by a narrow and crooked channel with 2 feet at low water. In 1863 the Provincial Government opened a passage on the eastern side of the harbour, through a beach connecting the mainland with Delerey island, and constructed a breakwater on its eastern side.

In 1874-75 the department repaired and extended the breakwater and constructed a retaining wall to the southward of it. Repairs were made from time to time up to 1884-85, when the breakwater was repaired and strengthened by close-piling, and the retaining wall, which had been destroyed, was reconstructed.

The breakwater, weakened by the ravages of the teredo, was badly damaged in 1889, and the following year the whole of it, with the exception of a portion of the south face, 67 feet in length, was destroyed. In 1892-93, fifty feet of the south face of the breakwater was repaired and strengthened by close-piling.

The destruction, in 1890, of the greater portion of the breakwater, involved the shifting of the channel at the entrance, (originally carrying 6 feet at low water), 500 feet to the westward, and the wasting away of the beach, and consequent loss of land by erosion to the eastward. The channel has since worked back nearly to its former position, but has a depth of only 5 feet, at low water.

To prevent further loss of land and to improve and protect the entrance, it was decided to reconstruct the breakwater. The work proposed included repairing and strengthening of the remaining portion of the old work, and the construction of a side extension 100 feet in length, 16 feet wide over the inner 64 feet and 20 feet, over the

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remaining 36 feet, over a bottom 2 feet above low water at the inner end and 2 feet below low water at the outer end, and the sum of \$2,800.62 was expended in procuring the materials required in the construction of the works proposed, and in placing and ballasting the creosoted timber substructure of the 100-foot extension.

During 1899-1900, the sum of \$933.22 was expended in completing the work commenced in 1898-99.

During the last fiscal year the sum of \$996.32 was expended in re-ballasting the top of the retaining wall, constructed in 1884-85, in close-sheathing the end for a distance of 15 feet; and in the construction of a "timber spur" at its inner end, to deflect the tidal currents off the clay bank, into the channel. The "spur" is 40 feet long and 16 feet wide on top, is constructed of round timber cribwork, filled with ballast, covered with spruce spars, and close-sheathed on the exposed sides; it extends out to low water and has an average height of 9 feet.

The re-construction of the breakwater has already had the effect of restoring the beach to the eastward nearly to its original condition, and to deepen the channel at the entrance.

Spring tides rise 4 feet.

WALLACE.

Wallace harbour, Cumberland county, is on the southern side of the strait of Northumberland, about midway between Pictou harbour and Bay Verte. It is at the mouth of the Wallace river and sheltered from all winds.

Wallace village is on the south side of the harbour, which, here, is about three-quarters of a mile wide. It has a population of about 800, and the industries of the place consist principally in farming, and in quarrying, and exportation of freestone, of which there are large and valuable beds in the immediate neighbourhood.

To facilitate communication with the north side of the harbour, which is a thickly settled district, during 1897-98 a ferry wharf was constructed by the department and a channel dredged to it from the main channel, and at the same time dredging was done on each side of the end of either wharf for a distance of 100 feet, and to a width of 50 feet on the western and of 80 feet on the eastern side. The wharf is 320 feet long, 18 feet wide, excepting the outer end, for a distance of 90 feet, which is built of double width, and the half of it forms the inclined landing slip, where the ferry steamer can land and receive freight and passengers at all times of the tide. The channel and the berths on the sides of the outer end of the wharf, were dredged to a depth of 7 feet below low water springs.

The wharf is a composite structure, constructed of blocks and spans, for a distance of 170 feet from the inner end, and of 150 feet of pile work, outside.

The inner end of the wharf was connected with the street, by a stone abutment, constructed with side and end walls of stone, and filled in with stone and clay, but as the stone used in the walls was small and badly placed, the walls partly collapsed and caused the top to settle unevenly.

During the last fiscal year, the sum of \$193.25 was expended in the re-construction of the stone abutment, 52 feet long and 16 feet wide on top, with side and end walls battering 1 in 4.

WALLACE (NORTH).

Wallace harbour, Cumberland county, is situated on the south side of the Straits of Northumberland, about midway between Pictou harbour and Bay Verte. It is at the mouth of Wallace river, and is well sheltered from all winds.

On the south side of the harbour, which is about three-quarters of a mile wide, is the village of Wallace, with a population of about 800 inhabitants. The industries of the place are chiefly farming and the quarrying and export of freestone, of which there are large and valuable beds in the immediate neighbourhood.

Opposite the village, on the north side of the harbour, a landing was constructed many years ago to accommodate the ferry service across the harbour, but as it was only

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available at, or near, high water, the department in 1879, dredged a channel through the mud flats, from the main channel of the river to the landing, a distance of about 1,600 feet, with a width of 45 feet and a depth of 7 feet at low water spring tides, which rise here 7 feet. The channel having silted up to a considerable extent, owing to its being nearly at right angles to the tidal flow, the department cleared it out in 1887, at a cost of about \$2,000.

To prevent the inner end of the cut from silting up, and to afford shipping facilities to the inhabitants of North Wallace and Fox Harbour, the department in 1888-89 began the construction of a wharf starting from the end of the public road and running past the remains of the old ferry landing on to the eastern or seaward side of the cut, the length constructed being 165 feet, and the outlay \$998.38.

In 1889-90, the sum of \$2,578.41 was expended in extending the wharf a distance of 180 feet along the seaward side of the cut, 20 feet wide, with an L on the outer end 20 by 20 feet.

During 1898-99, the sum of \$747.54 was expended in constructing an incline ferry slip of pile-work on the western side of the wharf. The slip is 121 feet long, 15 feet wide, thoroughly well and substantially built of pile-work bents, placed 10 feet apart, and it has proved a great convenience to the steam ferry service since established across the harbour.

In 1900-01 the sum of \$207.47 was expended in procuring materials for the renewal of floor-stringers, covering and cap on 260 feet of the inner end of the wharf, and during the last fiscal year an amount of \$537.53 was spent in the removal of the top to be renewed, and in placing the new stringers, covering and cap procured during 1900-01.

WALTON.

Walton harbour, Hants county, is the mouth of La Tête river, and is situated on the south shore of the Basin of Minas, Bay of Fundy, about 14 miles north-east of Cheverie, at the mouth of the Avon river. The village of Walton, which is situated at the head of the harbour on its north-east side, has a population of 500. The most important industry of the place is the shipment of gypsum, of which from 5,000 to 10,000 tons are annually shipped to the United States.

For the protection of the harbour, a breakwater was built by the department in 1891. The work is 250 feet long, 28 feet high at the outer end and 22 feet wide on top. It is substantially built of round log cribwork of the usual type, well fendered and filled with ballast. The inner face has a batter of one in eight and the outer side one in two. The outer face, the end and the inner face, for a distance of 100 feet, are close sheathed. On the seaward side is a break of 4 feet high, built of 12-inch timbers, strongly braced by knees, spaced 10 feet apart.

At the outer end of the work is a depth of 24 feet of water at high tide.

In 1900-01 necessary repairs were made.

In the present fiscal year the sum of \$536.82 was expended in reflooring the breakwater with 3-inch plank, stringers and guard timbers, with some few top cross-logs, break-timbers and knees.

Spring tides rise 48 feet, neaps 40 feet.

WASHABUCK CENTRE.

Washabuck, Victoria county, is a district on the south side of the eastern end of St. Patrick's channel, an arm of the Bras d'Or lakes, and extends about 6 miles along the shore. Washabuck Centre is situated near the centre of the district.

To facilitate the shipment of produce and cattle from the district, the sum of \$2,500 was voted for expenditure during the last fiscal year towards the construction of a wharf at Washabuck Centre.

The proposed wharf is to be 218 feet long, with an L at the outer end 20 by 20 feet, constructed with blocks and spans of round timber cribwork, with creosoted timber superstructure, and with outer faces of the two outer blocks protected by close-sheathing.

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The wharf is to be connected with the highway by a road 102 feet in length and 20 feet in width on top. The depth of water at the outer end, at low lake level, will be 12 feet.

Up to the end of the fiscal year tenders had not been called for the construction of this work.

Expenditure for the fiscal year was \$106.03.

WHITE HAVEN.

White Haven, Guysboro' county, one of the finest harbours in Nova Scotia, is on the south or Atlantic coast, 14 miles to the westward of Cape Canso.

In 1854 the residents, with some aid from the provincial government, undertook the construction of a canal for boats through a low and narrow isthmus between Marshall Cove, 3 miles within the entrance, and Witch Cove at the eastern extremity of Tor Bay. On the completion of improvements made in 1876, it was 620 feet in length and from 10 to 12 feet in width; the bottom was about 1 foot above extreme low water, or 4 feet 6 inches below the level of extreme high water. Prior to 1884 the walls had become dilapidated, the southern entrance was blocked with sand, and the channel inside filled with sediment and washing from the slope.

In 1894-95 repairs and improvements were made by the department, with the object of obtaining, ultimately, a uniform depth at extreme low water of 1 foot and a width, between retaining walls, of 12 feet. The repairs and improvements effected included the removal of 160 feet of old retaining wall on each side at the south end, and the construction of walls 10 feet wide on top, of which 20 feet at the outer end on each side are of cribwork, and the remaining 140 feet of brush and stone; temporary repairs to the retaining walls on both sides from 160 to 270 feet from the south end, and on the east side from 328 to 480 feet from the south end; the construction of new walls on either side from 480 to 500 feet from the south end as foundations for bridge abutment, built by the municipality; the reconstruction of 100 feet of wall on the west side (500 to 600 feet from the south end); the construction of 141 feet of temporary wall on either side (600 to 741 feet from the south end); and deepening from end to end to within 3 to 6 inches of extreme low water.

During the fiscal year 1901-02 the sum of \$999.67 was expended in continuing the repairs and improvements in progress in 1900-01, and is completing them, with the exception of 80 feet of brush and stonework and 20 feet of cribwork on each side at the north end. The work performed included completing the stone retaining wall on each side 277 to 488 feet from the south end; the construction of 185 feet of stone retaining wall on the west side (665 to 750 feet from the south end); and of 155 feet of stone retaining wall on the east side (595 to 750 feet from the south end); and in deepening between retaining walls to about 1 foot at low water.

WHITEWATER.

Whitewater is a small farming and lumbering settlement of 200 or 300 people, situate on the west coast of the Basin of Minas, about three-quarters of a mile south of Cape Blomidon and 10 miles north-east of the village of Canning. In 1897-8 the department built a public wharf by day labour. It is 285 feet long, 20 feet wide with an L at the outer end 35 feet long, where at h.w.o.s.t. there is a depth of 17 feet of water. The wharf is constructed of block and span work, the blocks being solid cribwork, 19 feet long in the length of the wharf, the spans being 14 feet in clear opening. The work is in good condition. Spring tides rise 40 feet, neaps 34 feet.

In the present fiscal year the sum of \$249.95 was expended in building a block of cribwork 40 feet long, 10 feet wide and 12 feet high, on the northern side of the shore end of the work to replace an ancient and dilapidated block that retained the bank forming the approach.

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WINDSOR.

Windsor, the county town of Hants, with a population of about 4,500, is an important town situated at the head of the estuary of the River Avon, on the Dominion Atlantic Railway, 46 miles north-west of Halifax. The shipping registered at the port for the year ending 1896, amounted to 131,000 tons. In the neighbourhood are extensive quarries of gypsum, of which about 120,000 tons are annually shipped to the United States. Some two or three million feet of lumber, B.M., are annually exported by water. Up to a dozen years ago the wharfs of the town were comparatively free of mud, and at high water large vessels could lie alongside and discharge or load.

In the last few years, owing partly, no doubt, to the construction of the new highway bridge, the mud has accumulated in front of the wharfs to such an extent that it is only at extreme high tide that moderate sized vessels can approach or leave the wharfs.

With the object of scouring away the accumulated mud, the department in 1897-8 began the construction of a training weir, extending down stream from the corner of the Falmouth abutment of the road bridge at an angle of 45 degrees with the bridge. The weir is constructed of brush mattresses at the bottom, with sufficient stone to keep them in place, and with cribwork on top of them. The thickness of the brush mattresses, with their load of stone, is from 2 to 4 feet, the average depth of the main or under crib is from 5 to 8 feet, and the uniform height of the 'A' shaped top crib is 7 feet; the sloping sides of the top of the work are sheathed with 3-inch hardwood plank, and the crest is covered with 6 x 6 x $\frac{3}{8}$ inch steel angle securely bolted. The work is built on shifting quick-sands, and owing to the great rise and fall of the tide (about 40 feet), and the great velocity of the current at ebb and flood tide, it has been constructed under great and peculiar difficulties.

In the fiscal year, ending June 30, 1901, the work was completed to its originally designed length of 600 feet.

In the present fiscal year the department expended the sum of \$2,725.93 in extending the work a further distance of 100 feet, and making repairs. The training weir is having a beneficial effect in causing the ebb tide to concentrate on the Windsor side and scour away the mud from the wharfs, but this operation is much slower than was expected. Spring tides rise about 40 feet, neaps 36 feet.

WRECK COVE (DON. MCLEOD'S).

Wreck Cove, Victoria county, is situated on that part of the north-eastern coast of Cape Breton island, known as the 'north shore,' between the harbours of St. Anne's and South Ingonish, and is distant 18 miles from the former and 12 miles from the latter place.

The cove is only a slight depression in the coast line, and fully exposed to all winds from north-east around to south-west. As the shores are composed of high bluffs, from 20 to 50 feet above the sea level, and the beaches at their base are low and narrow, during stormy weather the fishing boats have no natural protection. In order to save their boats at such times, the inhabitants, aided by the provincial government, cut a road along the face of the bluff, from the top of the bluff, where the fish-houses are situated, to the shore, and on the approach of storm, the fishermen haul up their boats on this road.

During the last fiscal year the sum of \$300.91 was expended in repairing and widening the road, and in constructing a rough round timber block at its lower end.

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PRINCE EDWARD ISLAND.

ANNANDALE.

Annandale pier, King's county, situated on the north side of Grand river, near its entrance into Boughton Bay, and one of the Prince Edward Island piers, control of which was assumed in 1884 by the Dominion Government, consists of a shore approach, or abutment 300 feet long, 22 feet wide and a pier head 35 feet wide having a frontage on the channel of 140 feet, where a depth of 7 feet at low water or of 12 feet at high water is carried. During the year the reconstruction of the pier head was completed, 30 feet of its eastern end having new bearing and fender piles put in, new caps, floor stringers, and covering; the eastern side of the timbering of the approach was also rebuilt, roadway made up with broken stone and gravel, and all other general repairs required effected to place the pier in good condition, the expenditure made for which was \$1,026.27.

BELFAST PIER.

Belfast pier, Queen's county, is situated on the south side of Orwell Bay, about one mile from the village of Eldon. The work has a total length of 600 feet with the addition of 'return' or L 105 feet long, this latter being 28 feet wide, and the remainder 24 feet. The work is built of close-faced timber, filled in solidly with brush, stone and clay filling on top, for the inner 400 feet, to form the roadway; the outer remaining part and L or 'return' being floor stringered and planked over. On the face of L or pier-head a depth of 4 feet at low water is carried, or of 13 feet at high water springs, that here rise 9 feet. In view of the dredging that is proposed being done at the pier; close piling on the east end and sides adjoining was effected during the past season, general repair of all of the roadway was made, the outer span filled in, a sidewalk and hand rail placed on the side of the approach and a building for use as a warehouse and waiting room for passengers constructed, 16 x 28 feet, the expenditure for all of which being \$1,120.69.

BLOOMING POINT POND.

Blooming Point Pond, Queen's county, situated on the north coast of the island, about a mile from the east end of Tracadie harbour; the pond has in all a length of about $1\frac{1}{2}$ miles, averaging about $\frac{1}{4}$ mile in width. During the spring and summer months gaspereaux and other fish visit it in large numbers for the purpose of spawning, entering it from Tracadie harbour or bay by a narrow shallow channel, this at the mouth and in several parts of its course, as it passes through marsh and sand flats, at times, when heavy storms occur, gets completely blocked, preventing the fish from passing in or out.

During the past spring an expenditure of \$48.01 was made in clearing out the channel where necessary, and some brush and stone work was put in at some places to prevent its closing again this season.

CAMPBELL'S COVE.

Campbell's Cove, King's county, is on the north side of the island, about 9 miles west from East Point and 14 miles north-east from Souris, the eastern terminus of the Prince Edward Island railway. The place was in 1872 selected by the provincial government for the construction of a small breakwater; an isolated work of 300 feet in length being built on the reef that extends from the west side of the cove, much benefit being derived from the work both by the fishing and farming industries of the district.

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The dominion government, that had assumed its control when the island entered Confederation, besides effecting repairs required in 1882-3, extended the work 250 feet seaward, and filled in 70 feet space between its inner end and the shore, making the work in all a length of 620 feet, all of which being 30 feet wide, and giving a small area of shelter, carrying about a depth of water of 8 feet at high water spring tides that here rise about four feet. The repairs and additions made by the department being of a most substantial nature, the work continued in good condition up to 1889 when some slight repairs to the planking became necessary, after that date, however, principally owing to the destructive action of the teredo the work was much injured on the occurrence of any severe storm, and although quite extensive repair was effected in 1895, damage was done, usually each fall and winter.

During 1899 a length of 80 feet of the original work was completely carried away, and an adjoining length of 50 feet so badly injured as to require reconstruction, all of which was effected during 1900-1, in addition to which two cribs, respectively 50 and 41 feet long by 30 feet in width, and about 4 feet high to form bottom for reconstruction of the outer end of the work, carried away in 1896, were placed in position, these cribs since July 1, 1901, have been fully completed at a cost of \$1,499.60.

CHINA POINT.

China Point pier, Queen's county, is situated on the west side of the Orwell river, near its entrance into Orwell bay; originally built by the local Government, its control was assumed in 1884 by the Dominion Government, when a payment of \$3,436.47 was made the local Government to recoup it for sums expended on repairs between that date and 1873 when the Island entered Confederation. The pier has in all a length of 426 feet consisting of shore abutment or approach, 140 feet long, six blocks with intervening spans, and a pier head fronting 72 feet on the channel, and having a width of 37 feet carrying 14 feet at low water or of 22 feet at high water spring tides that here rise 8 feet.

During the past summer the sum of \$306.56 has been expended in the further fender piling of the pier head, 15 each of creosoted and native timber piles being put in on the faces and ends of the work, the top face timbers of the inner part of the approach were also renewed, two spans replanked and general repair made of roadway.

CANOE COVE..

Canoe Cove, Queen's county, situated on the south coast of the island, and distant, by water, about 18 miles from Charlottetown, and 10 miles east from Crapaud. The cove is a small indentation in the general coast line, giving fairly good shelter for boats from winds from south-east to west, being protected from north winds by a reef extending from the point on its west side.

To provide better protection at the place, it being exposed from the south to south-west, the construction of a breakwater being arranged for, work was commenced about the middle of April, 1901, and a length of 100 feet constructed, when the work was closed down for the winter. Construction was resumed about the first of June and by the end of that month, and close of fiscal year, the bottom portion of an additional length of 100 feet, 32 feet wide, averaging 4 feet high, was about ready for placing. The work as being built is isolated, its inner end being about 500 feet from the point on the eastern side of the cove, and its line or direction being about west, it stands in a depth of from 4 to 5 ft. at low water, ordinary tides or from 12 to 13 feet at h.w.s., tides, above which, its top is 5 feet, making its total height 17 to 18 feet, its form being up to one foot above low water; it has a width of 32 feet sloping 1 in 12 on the sides, this slope on the inner side being continued to the top of the work, but on the outer or seaward side, the slope or batter is 1 to 1, the face being sheathed with 4-in hardwood plank, the top finishing at a width of 19 feet.

During the fiscal year the sum of \$5,087.43 has been expended on materials and construction.

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GRAHAM'S POND.

Graham's Pond, King's county, is situated on the east coast of the island about 5 miles from the entrance of Cardigan bay, and about the same distance north of the entrance into Murray harbour. The pond has a length of about half a mile, and a width of from 600 to 800 feet, carrying in the body of the pond, and at a short distance from entrance into it from the 'Strait', a depth of from 6 to 8 feet of water at ordinary pond level, which usually has been from $1\frac{1}{2}$ to 2 feet higher than low water spring tides, and 3 to $3\frac{1}{2}$ feet below height of high water springs, that here rise about 5 feet. During 1900 a new channel was cut into the pond by the Marine and Fisheries Department so if possible to admit of boats entering at all times of the tide, and this having partly filled in and the position changing back to what had been its original, an expenditure of \$99.80, was made during the past fall, in clearing out the cut made by Marine & Fisheries Dept., and building a small brush and stone protection work, 90 feet long on the south side, so as to retain it in new position.

GEORGETOWN.

Georgetown pier, King's county, situated at Georgetown, the terminus of the Georgetown Branch of the P. E. Island railway, and shiretown of Kings county, on the western side of the Montague river, near its entrance into Cardigan Bay. The pier, before the damage it sustained during the storm and tidal wave, October 11, 1900, and the succeeding storms of that fall and winter, had in all a length of 640 feet, with width of from 30 to 36 feet, and carried on the end and along the sides, of its outer 300 feet, a depth of 12 feet at low water or of 17 feet at h.w. spring tides. The shore abutment or approach of the work 340 feet long is constructed of close faced timber work filled in with brush, stone, poles and clay filled on top, forming the roadway, while the outer part was formed of six 'blocks' with alternate 'spans'.

By the storm of the fall of 1900 the pier was left a complete wreck, the four outer blocks being carried away down to about low water, while the inner blocks and west side of the shore abutment were much damaged, the floor stringers and covering all being carried away. During the fiscal year repair and reconstruction of the inner 420 feet of the work was effected, expenditure for which was \$1,499.95 the work done consisting in the rebuilding of the two inner blocks, repair of shore abutment, filling in of what had formerly been the two inner spans, and constructing a landing block and slip 20 by 15 feet for boats.

HAGGERTIES.

Haggerties wharf, Queen's county, is situated on the south-eastern side of the Hillsborough river about 10 miles from Charlottetown. The wharf now consists of a shore approach 372 feet long and 20 feet wide, and pier-head 91 feet long and 31 feet wide at outer end which extends out to a depth of 9 feet at low water or of 19 feet at high water springs that here rise 10 feet.

During the past year all of the work was put in good repair, the work done consisting in the levelling up and close piling of the outer block, filling in what formerly had been two spans with close laid poles, ballasting, levelling up, and fender piling the second block, putting in new top timbers on sides of the approach, and making up the roadway with broken stone and gravel, the expenditure for which was \$900.21.

HURDS POINT.

Hurds Point pier, Prince county, is situated on the southern side of Bodeque Harbour about 3 miles from Summerside, the shiretown of Prince county.

The pier is a most important shipping place, being about the only outlet for the surplus produce of a large and rich agricultural well-tilled district, it is also the calling place of the steamer plying on the harbour which makes several return trips daily between Summerside and the pier. The pier has a length of 510 feet and is 26 feet wide, excepting on the outer 50 feet or pier-head where the width is 65 feet.

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During the past season the sum of \$269.11 was expended in close fender-piling the face of the pier-head, rebuilding part of the inner wall of the shore abutment, and general repairs of roadway.

KIER'S SHORE.

Kier's Shore pier, Prince county, is situated on the east side of Richmond Bay about 7 miles from Kensington, a village and station on the line of the P. E. I. railway.

The pier has a length of 1,006 feet and a width of from 20 to 25 feet, except on the outer end where, for 50 feet, it is 40 feet wide. With the exception of a short span of 18 feet the work is close faced timber, filled in with brush, stone and gravel which forms the roadway, except on the outer 50 feet that is planked over.

During the fiscal year the sum of \$483.09 was expended on the making up of the roadway with broken stone, putting on guard timbers, and repairing generally of the pier, placing all of in good condition.

MIMINIGASH.

Miminigash harbour, Prince county, is situated on the north-west coast of the island about 15 miles from North Cape and 18 miles from West Point.

Before its improvement by the department it was one of the numerous ponds along the coast that emptied into the Gulf of St. Lawrence, the channels to which, as they passed through sandy beaches, were constantly changing in position, and at times, on occasion of storms, completely blocked up, the entrance to this pond being sheltered by 'Miminigash Reef,' a ledge of rock nearly a mile long, which lies parallel with the shore at about half a mile distant, had much advantage over the other ponds on the coast and was the one generally used by fishermen in stormy weather.

After its examination and of the other sites on the coast proposed to be selected by the department for the formation of a harbour, work was commenced in 1878, and this now consists of piers or breakwaters on either side of the entrance; these are placed 56 feet apart confining the channel and keeping it in a permanent position. The breakwater or pier on the north side is 550 feet long, and that on the south side 350 feet inward; from both beach protection, works extend to guard against a new channel forming back of the breakwaters. These beach protection works are of cribwork filled in solidly with brush, poles and stone, the one on the south side is 270 feet long and on the north side 350 feet.

During the past year the sum of \$1,500 was expended on the general repair and strengthening of the works, and consisted in the close piling with hardwood on the outer northern block, part of which was also replanked; close piling of south side of outer end of southern breakwater, which was also partly reballasted, and in filling in, with stone and poles, settlement that had taken place in the cribwork protection.

MORRISONS BEACH.

Morrisons Beach, Kings county, is on the south side of the entrance of Grand River into Boughton Bay, its north end being opposite Annandale pier, where the width of the river is about 1200 feet. The beach which extends in a northerly direction has a length of about 4,230 feet, with width of from 200 to 600 feet at ordinary high water or of from 600 to 2,000 feet at low water spring tides. At one time, it is said that stone, pole and brush protection works extended the entire length of the beach but that this was destroyed some 25 or more years ago by a storm, a part of the work was reconstructed some 15 years ago, but this was carried away shortly afterwards to such an extent as to render it useless for the purpose intended, viz, :—to form a roadway available for traffic at all times of the tide, over the beach to "Morrisons Point" where there has been a shipping place for produce; the high parts of the beach usually being covered with drift material, while the low parts at and near high water were so covered with water as to make the passage of teams impossible.

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During the past season the sum of \$492.25 was expended in the construction of two brush hurdles each about 3,500 feet long, placed about 30 feet apart and near the centre of the beach for the purpose of arresting the drift sand and so make it up and prevent the high water spring tides passing over it.

NEW LONDON.

New London harbour, Queens county, is on the northern coast of the island about 10 miles from the entrance of Richmond bay. Within its entrance which has a width of about 1,200 feet, the harbour is about 3 miles long and nearly as wide, it receives the waters of the Southwest, the Stanley, the French and the Hope rivers all of which are navigable, for at least short distances, and having at them wharfs or shipping places from which is exported the surplus produce raised in the surrounding districts, which are both thickly settled, land well cultivated, and very productive; quantities of general merchandise, coal, lumber, limestone, &c., are, as well, imported by water.

New London not having, like many other parts of the island, convenient railway facilities, and as the harbour is largely used as a fishing station and harbour of refuge, for which it is most convenient for the fishermen, being near some of the best fishing grounds on the Gulf of St. Lawrence. For the improvement of the entrance, which is obstructed by a shifting sand bar, works were begun by the department in 1878, and these now consists of beach protection and breakwaters on outer side; that on the eastern side has a length of 1,120 feet, while the western one has 460 feet; their purpose being to extend and preserve the sand beaches, and by confining the current cause increased scour and improve the water over the bar, which result has been obtained to a satisfactory extent, the depth of water being improved, at such time as the works have been in good condition, fully 6 feet, and giving at low water 12 feet over the bar, rendering New London harbour one of the best on the north coast of the island.

Since construction the western work has received no damage requiring repair, the eastern one however, being exposed to a strong tide action of running ice, and at times to a very heavy sea, has suffered damage so as to require, about yearly, some expenditure for its maintenance.

By the tidal wave of October 11, 1900, and the following storms of that fall and winter two sections of the outer part of the work, respectively 102 feet and 475 feet in length, were completely carried away, and some damage was done to the outer block. A contract for the repair and reconstruction of which was entered into on June 18, 1901, and the work satisfactorily completed on October 8 of that year, at a cost of \$5,760.51.

NORTH CARDIGAN.

North Cardigan pier, Kings county, is situated on the north side of the Cardigan river about 5 miles from Cardigan bridge and station, on the line of the Prince Edward Island Railway, and is one of the Prince Edward Island piers control of which was assumed by the Dominion Government in 1884-85.

The pier as constructed had a length of 381 feet, consisting of shore abutment or approach 100 feet long, and 7 blocks with intervening spans, and from 23 to 25 feet wide out to the outer block or pier-head, this having a width of 32 feet, the blocks being from 19 to 25 feet long and the spans from 14 to 26 feet, the approach and all the blocks were constructed of close face timber work, filled with brush, stone and gravel, the latter forming the roadway, excepting on the two outer blocks that were floor stringered and planked over. Being a very old work and much out of repair, when assumed by the Dominion Government, it since required more or less repair yearly to keep in passable condition for traffic.

During the past year the sum of \$1,941.30 was expended on the reconstruction of all of the top portion that had been carried away or damaged by the storm and tidal wave of October 11, 1900, all of the older spans were also filled in with close-laid poles, stone, &c., the outer 97 feet floor stringered and planked, the sides and end of the work fender piled at 5 feet centres, inner part of approach reconstructed, and ballast that had fallen over the sides of the pier removed, placing the work in good condition.

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NINE MILE CREEK.

Nine Mile Creek pier, Queens county, is situated on the south coast of the island, about 6 miles west from entrance to Charlottetown harbour, on the shallow inlet between St. Peters island and the mainland.

The pier was constructed many years ago by the Local Government to provide shipping facilities for the district, and is one of the Prince Edward Island piers assumed by the Dominion Government in 1884, when the sum of \$482 was paid the Prince Edward Island Government to recoup it for the repairs effected to the pier between 1873 and that date.

The pier has in all a length, measured on centre line, of 290 feet, with average width of 20 feet, and a return or L 35 feet long and 20 feet wide, this and the adjoining end of the pier being floor-stringered and planked over, the roadway of the remainder being formed of broken stone, and gravel filling.

Originally the work consisted of shore approach and abutment about 200 feet long and two blocks with intervening spans, but the latter have been filled in solidly with poles, brush and stone. During the past season the sum of \$354.69 was expended in making up settlement and wash-out that had taken place in roadway, building 40 feet additional at the inner end where wash-out had occurred in the bank, fender piling end and return or pier head and replacing all broken and decayed planking.

PINETTE.

Pinette pier, Queens county, is situated on the south side of the Pinette river immediately below and at right angles to the public road bridge crossing the river, and with which it is connected by a span 28 feet in length.

The pier is 120 feet long by 28 feet wide, and constructed of square timber close-faced work, full ballasted, floor-stringered, and planked over. It faces on the river channel where a depth of 8 feet of water is carried at low water or of 16 feet at high water spring, that here rise 8 feet. The pier being an old structure when assumed by the Dominion Government, in 1884, and much out of repairs, expenditure, have since, several times, been required to keep it in fit condition for traffic.

During the past season the sum of \$249.97 was spent on effecting general repair to the roadway, driving fender piles on faces and end and constructing a 'spur' on the inner side near the outer end 15 x 20 feet for protection from the ice which that year was forcing the pier outwards into channel.

PORT SELKIRK.

Port Selkirk pier, Queens county, is situate on the south side of Orwell river near its entrance into Orwell Bay, and is distant about 20 miles by water from Charlottetown; the pier is in the form of a T, consisting of a pier head 250 feet long and 35 feet wide fronting on the edge of the channel, where a depth of about 8 feet at low water or of 16 feet at high water spring tides is carried, that here rise 8 feet, connecting with the shore by an approach 250 feet long and 23 feet wide. All the pier-head and outer part of the approach are built of a series of 'blocks and spans,' the latter being floor-stringered and planked over.

During fiscal year, 1902, the sum of \$588.37 was expended in the replanking of the road-way of the pier, new floor stringers and span beams being put in where required, 15 creosoted piles and 27 spruce piles being driven along the outer face and ends of the pier-head which with the other general repairs effected places the work in good condition.

POWNAL.

Pownal pier, Queens county, is situated at the head of the north-eastern part of Hillsborough bay about 9 miles east from Charlottetown, it was built by the Local Government many years before Confederation and one of the piers control of which was

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assumed in 1884 by the Dominion Government. The pier is in all 753 feet long, consisting of shore abutment 209 feet long, and 16 feet wide, and 14 blocks with intervening spans; the inner blocks are from 14 to 16 feet wide while the outer blocks forming the pier head, are 40 feet wide.

Originally there was little or no water at the pier at low water, but in 1881-82, in order to permit of large boats and small vessels reaching the pier at all times of the tide and of large vessels at high water, the Department had a channel 1,275 feet long by 50 feet wide dredged from the deeper water outside carrying a minimum depth of 6 feet at low water, also forming a basin 250 feet long and 90 feet in width on the eastern side of the outer end of the pier.

During the fiscal year the sum of \$821.02 was expended in effecting such temporary repairs as to render the pier serviceable for the fall shipments (this at an expense of \$95.57) and procuring materials required for reconstruction of most of the top portion, which has become unsafe by decay and age, it being proposed doing the work and getting the further materials with the appropriation granted at the last session of Parliament.

SKINNER'S POND.

Skinner's Pond, Prince county, is on the north-west coast of the island midway between Miminigash and North Cape, being about eight miles distant from each, while from Harper's Station on the line of the Prince Edward Island Railway it is about three miles.

The pond, one of many of similar nature on the coast, has a length of about a mile with average width of about 500 feet, and carries in it at ordinary pond level, which is about 4 feet higher than low water spring tides, a depth of from 5 to 10 feet of water.

During the past spring the sum of \$30 was expended in opening up the channel from the pond, that had become blocked by a storm, causing the flooding of some of the low lands adjoining.

SOUTH RUSTICO.

South Rustico pier, Queen's county, is situated near the mouth of the Wheatley river, which enters Rustico harbour at its southern end, and is distant from Hunter River station on the line of the Prince Edward Island railway, about six miles.

The pier which was constructed by the local government many years before Confederation, has a length in all of 593 feet, and originally consisted of a shore abutment 45 feet long by 17½ feet wide, and three blocks with intervening spans, the inner block being 17 feet wide by 23½ feet long, and the outer blocks respectively 29 and 30 feet wide and 20 and 24 feet in length, the spans being each 25 feet long.

Excepting at the two outer blocks, the work is dry at low water, while at the outer end and sides of the outer one, 5 feet of water is carried at low water or of 10 feet at high water spring tides, that here rise 5 feet. All of the work being greatly damaged by the tidal wave and storm of October 11, 1900, and the succeeding storms of that fall and winter, reconstruction of the top portion, of about the entire pier, became necessary; this was effected during the past season at a cost of \$1,499.97, the outer block being rebuilt from height of low water, spans solidly filled in with close laid poles, brush and stone, adjoining two blocks and shore abutment rebuilt for from 3 to 5 feet in height, roadway made up with broken stone and gravel, the outer block close piled, and remainder of work fender-piled at 10 feet centres, the outer block being floor-stringered and planked over, mooring posts put in, &c.; placing the pier in good condition.

SUMMERSIDE.

Summerside Harbour, Prince County, is on the southern coast of the Island, and its second place in importance for shipping; the town of Summerside being also next in size to Charlottetown in population, having about 3,000 inhabitants, and being one of

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the principal stations on the line of the Prince Edward Island railway, by which it is distant from Charlottetown 49 miles, and from Tignish the western terminus 68 miles.

During the season of navigation daily communication is had with the mainland by the steamers of the Prince Edward Island Steam Navigation Company at Point du Chêne, where connection is made by the Intercolonial Railway with all parts of Canada and the United States. The entrance into the harbour between Indian Head and Pheasant Point is about one and a half mile wide, a sandspit, however, partly dry at low water, extends about 3,200 feet from Indian Head, the water also being shoal for a distance from the opposite shore, so that the deep water channel carrying 18 feet or better at low water spring tide is only about 500 feet wide opposite the lighthouse, that is situated on the north side of the sandspit outward of Indian Head, inward of this up the harbour to the railway and other wharfs at the town the channel is from 400 to 1,200 feet wide.

For improvement of the channel, as to direction and depth, dredging at different times has been done by the department, while for protection from southwesterly winds a contract was entered into May 25, 1900, for the construction of a breakwater to extend 3,145 feet from Indian Head to the outer side of the sandspit on which the lighthouse is situated; work, however, was not commenced until the summer of 1901 when, by the fall of that year, a length of about 250 feet, equal to finished, had been built, this being at the inner end near to Indian Point; the value of the work performed proportional with contract price, with cost of inspection, &c., being about \$3,398, and \$1,283.56 for dredging during the past fiscal year.

STURGEON.

Sturgeon pier, King's county, is situated on the southern side of Cardigan bay, about six miles south of Georgetown, the shire town of King's county, and terminus of the Georgetown branch of the Prince Edward Island railway.

The pier, constructed many years before Confederation by the local government, is one of the Prince Edward Island piers assumed in 1884 by the Dominion government, when a payment was made the local government of \$847.92, to cover the expense of repairs on the pier between 1873 and date when taken over by the department.

The pier consists of shore abutment or approach 250 feet long, and originally of four blocks with intervening spans, the faces of the approach and blocks being constructed of square timber close-faced, and filled in with brush, stone and gravel, the latter forming the roadway.

Some years ago the two inner openings were filled in with close laid poles, &c., above the poles, on the sides, for a height of two feet, squared timbers being placed to retain the gravel and stone forming the roadway. During 1892 a cut was dredged from the channel to the pier 720 feet in length and 100 feet in width, and berths 100 feet in length by 50 feet in width along the sides, carrying twelve feet at low water or seventeen feet at high water spring tides that here rise five feet; after the dredging was done quite a settlement occurred in the outer blocks, and as danger existed of their sliding into the new cut, close piling of their sides and the outer end of the outer block was done in 1893-94, all the work, at the same time, being put in good condition and repair.

During the past season the two outer spans were filled in with close-laid poles, stone, &c., and the roadway, out to the outer block, made up with broken stone and gravel, repair as well being made to the planking on the outer block, the cost of all of which was \$523.06.

SOURIS.

Souris harbour, Kings county, is situated on the southern side of the island, about sixteen miles westward from East Point, and is most important as a harbour of refuge and place of shipment, both of which are rendered available by the breakwater built and maintained by the Dominion government.

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This work commenced in 1877 has a length of 1,250 feet. The work is of different forms and construction, and for description may be divided into three sections or portions, viz.:—

Inner—290 feet long and 30 feet wide, formed of close-faced timber, plumb-faced on sides, with, on the seaward side, stone slope of three to one, the work standing in an average depth of seven feet at low water.

Middle—530 feet long, averaging 65 feet wide, also of square timber close-faced, but on the seaward side having the upper ten feet sloping one to one; this section stands in an average depth of seventeen feet at low water, and has during the past two summers and falls been having a stone slope formed on its outward or seaward side. Of this 4,680½ cubic yards were delivered and placed during the past fiscal year.

The third or outer section of the breakwater is 390 feet long of close-faced timber, averaging 24 feet wide and having on the seaward side a stone protection slope extending to within three feet of its top and sloping one to three.

There is besides the foregoing an outer block 40 x 80 feet, constructed of creosoted timber, standing in a depth of twenty-two feet of water at low water spring tides.

Expenditure during the fiscal year was \$5,180.

TIGNISH.

Tignish harbour, Prince county, is on the north or gulf coast of the island, about six miles southward from Cape North, the harbour is at the mouth of the Tignish river, which here enters the Gulf of St. Lawrence, the coast line on either side of the river's mouth being quite straight for a long distance, gales from the north-east to south-east throw in a very heavy sea, and this acting on the sand beaches, often at times, years ago, caused the entrance to get completely blocked up; thus it would remain until broken through by a freshet or an unusually high tide.

To keep the entrance open and preserve the channel in one position, the government of Prince Edward Island began, in 1868, the construction of works on either side of the river's mouth, contracting this to a width of forty feet, the effect of which has been, by increasing the current, to both give better depth of water and keep the entrance open to navigation.

Since Confederation, the works being assumed by the Dominion government, the original works have been raised, repaired and much extended; beach protection works have also been built on either side, reaching to the highland to protect against the possibility of a new channel being broken through by the sea; a portion of the channel as well was deepened by dredging, all of which have proved of great benefit, increasing the business of the port, and giving good accommodation and shelter for fishing boats and small vessels.

On August 21 last the work contracted for on November 3, 1900, viz.: Extension of 60 feet in length by 40 feet in width at the outer end of the northern breakwater was satisfactorily completed at a cost for the past fiscal year of \$1,937.42.

VERNON RIVER.

Vernon River pier, Queen's county, is situated at the head of navigation on the Vernon river, about two miles above its entrance into Orwell bay.

The pier is built on the lower side of the public road bridge, here crossing the river, and with which it is connected by an approach 30 feet in width and length. The pier is one of the Prince Edward Island piers, control of which was assumed by the Dominion Government in 1884, at which time the sum of \$908.66 was paid to the Island government to recoup expenditures made upon it for repairs after Confederation up to 1884. The pier is a close-faced block, 120 feet long by 30 feet wide, placed parallel with the channel, and has along its outer face a depth of nine feet at low water, or of 17 feet at high water spring tides, and is reached by a channel or approach, about a mile long, dredged to it by the department in 1877-82, which, when made, carried same depth of water. As the pier was a very old structure and much out of repair when

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taken over by the Dominion government, and being exposed to the attack of the teredo, some expenditure has been found necessary, about yearly, to keep it in a passable state of traffic.

During the past year the sum of \$149.95 was expended in building up the outer 40 feet, putting in new span beams on the approach to the pier from the bridge, replacing fender piles along the outer end and effecting general repair of planking, &c.

WOOD ISLANDS.

Wood islands, Queen's county (so-called), are situated about 30 miles south-east from Charlottetown, and 15 miles to the westward of Cape Bear, and it is the most southerly point of the island.

Originally two small islands, they are now connected, and to the shore by sand beaches, a sandpit as well extending out from the shore to within 300 feet of what had been the eastern island, and forming within it and the western island and the connecting beaches, a large shallow pond having an area of about 300 acres, the outlet from which is at the east end of the eastern island.

Here the formation of a shipping place was commenced in 1859, by the provincial government, but as at no time the works were in good condition, little if any good resulted from them until after 1894, when reconstruction of the northern breakwater was effected by the department; this having a length of 2,500 feet and 20 feet wide; the southern breakwater, 550 long, was also repaired. As the southern work was found too short, a contract was entered into for its extension a further 400 feet, on November 3, 1900, and this was finished in a satisfactory manner on December 20, 1901, at contract sum of \$6,980; the sum of \$1,020.82 was also expended by day labour in close-fendering the channel face of the outer 475 feet of the northern breakwater, ballasting the outer 100 feet, repair of planking, and building a beach protection 50 feet long at the inner end of the work.

The expenditure for the past fiscal year was \$4,145.

WEST POINT.

West Point wharf, Prince county, is situated on the north side of Egmont bay and eastern shore of Northumberland Strait, about 14 miles from O'Leary station, on the line of the Prince Edward Island railway, and is about 35 miles by water from Summerside harbour.

The wharf is one of the Prince Edward Island piers, the control of which were assumed by the Dominion government in 1884. It had been built many years before Confederation by the provincial government to give shipping facilities to the district, there being no wharf or shipping place where vessels of any size could call at between Summerside and North Cape, a distance of about 60 miles.

West Point, being midway between these points, was considered a favourable site for a wharf, and the work is said to have proved of much benefit up to 1884, when it was badly injured on the breaking up of the ice, and remained in bad condition until 1898, when it was thoroughly repaired by the department, the wharf having a length of 620 feet, width of 30 feet and extending out to a depth of seven feet at low water or of 11 feet at high water spring tides, that here rise four feet. For the purpose of obtaining a better depth of water, a contract was entered into June 5, 1900, for an extension of 100 feet, this also to have a width of 30 feet, and extend to a depth of nine feet at low water. This extension was completed August 21, 1901, making the wharf a length of 720 feet. Contract sum, \$5,500.

The expenditure during the past fiscal year was \$3,542.50.

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PROVINCE OF NEW BRUNSWICK.

ANDERSON'S HOLLOW.

Anderson's Hollow, Albert county, is a cove of Salisbury bay, on the north-west side of Chignecto channel, in the Bay of Fundy. Spring tides rise $40\frac{1}{2}$ feet, neaps $32\frac{1}{2}$ feet.

The breakwater wharf at this place was begun in 1879 by the construction of a detached block 550 feet from the shore, with which it was afterwards connected. In August, 1885, the work was 290 feet in length, and three years later was carried to the shore. The structure, 25 feet wide on top, was originally 27 feet high at the outer end, but the bottom having been raised by the accumulation of littoral drift, the height is now three or four feet less. It is built of round cribwork, lightly battered on the inside, but sloped at the rate of $\frac{1}{2}$ to 1 and sheathed on the weather face.

The breakwater was damaged by storm in 1895.

In 1895-96 a small sum was applied to bolting loosened timbers for temporary security.

During the fiscal year 1896-97 the inside face of the wharf at the outer end was taken down and rebuilt for a distance of 75 feet on top and 44 feet at the bottom. The list was taken out, the new face being carried to a height of 15 feet in order to level the top and new covering was laid for a length of 75 feet. Seventy feet out of 110 feet of dismantled break were reconstructed and fenders were placed on the inside of the new face.

In 1898-99 petty repairs were made.

In 1900-01 the break-timbers, which had been started up from 3 to 9 inches by storms. for a distance of 290 feet, were restored to position and a channel 300 feet long, 35 feet wide and 5 feet deep, was made by means of a wheel scraper. It was found, however, that the shoal formed again rapidly with the recurrence of any south-west swell. A groyne, 50 feet in length, made of piling and 9-inch. timber, was built on the outside of the work, in order to check for a time the accumulation of littoral drift on the inside.

During the fiscal year 1901-02 new sheathing, 6 inches thick and from 22 to 26 feet long, was laid and secured with $\frac{7}{8}$ -inch bolts at different places along the weather face of the outermost 190 feet. Additional bolts were also driven to secure the old and loosened sheathing, while 71 pieces of new covering, 6 inches thick, were placed on the top of the work at a cost of \$224.96.

Like many other works in the Bay of Fundy, Anderson's Hollow crosses the direction of the flood stream and of the prevailing winds. In consequence, an accumulation of littoral drift is found on the south-west side, which travels around the end and is deposited under the lee of the breakwater, forming a shoal, which is an obstacle to vessels.

BACK BAY.

Back Bay, Charlotte county, a fishing station about four miles west of L'Etang and two miles east of Latête, is situated on an arm of Latête harbour, in the county of Charlotte.

At this place the provincial government built a wharf of crib and trestle work, 239 feet in extreme length, extending nearly to low water mark. An extension to this wharf of 86 feet, comprising a pier-head 50 x 30 of round crib work fully ballasted, sheathed on two sides for protection from ice, a block 20 feet square on top, and two

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spans of 18 feet, the whole carrying the end into 8 feet at low water, was added by the department during the fiscal year 1900-01. This work was built by contract and completed.

Back Bay is a regular calling place for one of the steamers of Passamaquoddy Bay, running from St. Stephen to Eastport, Campobello, Deer Island, Letite and other intermediate points. Spring tides rise 24 feet.

Towards the end of the year, 1901-02, a landing to suit different heights of the tide was begun, a gallows for hoisting freight was built, and a ladder placed against the face of the work.

The expenditure during the year and the total expenditure for contract work and inspection amounted to \$7,459.46.

BATHURST.

Bathurst, Gloucester county, the shire town of the county and having a population of about 1,500, is situated at the head of Nepisiguit bay, the south-western arm of the Baie des Chaleurs. It is a station on the Intercolonial railway, 120 miles north of Moncton, the western terminus of the Caraquette railway, and one of the north shore deal ports.

At the session of Parliament, 1901, an appropriation was made for the construction of a new wharf at Bathurst.

A survey having been made, it was found that the facilities required would be more easily attained and at least cost by acquiring the provincial government wharf, built in the channel off the eastern side of the public bridge between Bathurst town and Bathurst village, and reconstructing it. The provincial government subsequently waived all claim to the wharf, and plans were prepared for reconstruction.

The old wharf, consisting of three blocks and two spans, was 174 feet long, from 27 to 37 feet wide on top and had a depth along channel side and outer end of 7 to 10 feet at low water. Spring tides rise 7 feet. The upper portion of the work was much out of repair and the timber decayed.

The proposed improvements consisted of the removal of old top, reconstructing, widening and straightening the wharf.

At the close of the year the work performed consisted of: removing top from inner block, 23 x 27 feet, for a depth of 7 feet, centre block, 68 x 30 feet, an average depth of 4 feet, and outer block, 38 x 33 feet, a depth of 3 feet; placing three tiers of new longitudinals, two of cross ties and a ballast floor on inner block; three tiers of longitudinals, two of cross ties and a ballast floor on outer block; and driving thirty-two piles.

The expenditure for the fiscal year 1901-02 amounted to \$1,996.02.

BAY DU VIN.

Bay du Vin, Northumberland county, is situated on the southern side of the inner Miramichi bay, 20 miles below Chatham and almost opposite Burnt Church.

A wharf at Bay du Vin was constructed by the provincial government between 1891 and 1894 and consisted of an approach 80 feet long and 19 feet wide on top, thirteen blocks generally $20\frac{1}{2}$ x $19\frac{1}{2}$ feet, 14 spans or openings of 23 to 25 feet, and an outer block 80 x 30 feet, the whole having a total length of 760 ft. The depth at the outer end at low water was 9 feet. Spring tides rise 5 feet.

Petty repairs were made in 1900-01.

During the year 1901 a contract was entered into for the reconstruction of a portion carried away, this to consist of four blocks, 25 x 25 feet, an outer block, 83 x 30 feet, and five intervening spans of 20 feet, a total length of 283 feet. The blocks and pier head required to be constructed of open-faced cribwork of round timber, the latter having double-face timbers from the bottom to the top, and the former from the bottom to 1 foot above low water. The pier head required to be sheathed all around with 7-inch hardwood; the blocks connected with 12 x 12 ft. stringers, and the whole of the top covered with 4-inch spruce plank.

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At the end of the year 1901-02, the first two blocks were built from 10 to 11 feet high and were ready to receive stringers. The third block was built 13 feet high, or to within three tiers of timber of required height, and the pier head was constructed 16 feet high, or to within two tiers of timber of required height. The crib of the fourth block was under construction but not placed.

The expenditure for 1901-02 was \$4,564.26.

BLACK BROOK.

Black Brook or Loggieville, Northumberland county, is situated on the southern side of the Miramichi river 6 miles below Chatham. It is the terminus of the Canada Eastern railway and a port of call for the steamer of the Miramichi Steam Navigation Company.

In February, 1901, a contract was entered into for the construction of a wharf. Operations were commenced towards the latter part of fiscal year 1901, and the work was completed in October of the same year.

The wharf consists of a stone embankment 172 feet in mean length and 20 feet wide on top with slope of 1 to 1 on the sides, a span of 15 feet and a pier head 25 x 40 feet.

The approach is made up of large stone on the sides, filled in between with small stone, gravelled over on top and finished with guard timbers on each side. The pier head is constructed close face of square timber filled with stone and covered with 4-inch plank. In consequence of the soft bottom on which the work was built, brush mattresses were placed under the whole of the work in order to avoid settlement in the future.

The expenditure for 1901-02, amounted to \$4,714.00.

BURNT CHURCH.

Burnt Church, Northumberland county, is a fishing and farming settlement situated on the eastern side of the inner Miramichi bay about 22 miles north-east of Chatham, and 3 to 6 miles south of Neguac. It is a port of call for the steamer of the Miramichi Steam Navigation Co., plying between Newcastle, Chatham, Neguac and Escuminac, and a place much frequented as a summer resort.

During the year 1899-1900, a contract was entered into for the construction of a wharf 1,180 ft. long, composed of a shore block or approach 200 ft. long, 23 blocks 21 ft. long by 20 ft. wide placed 20 ft. apart, and a pier head 60 ft. long and 40 ft. wide, the latter standing in 9 ft. at low water. Spring tides rise 5 ft. The work throughout was constructed open of cribwork of round timber with 12 x 12-inch stringers over the blocks and spans and 4-inch covering over the whole of the top.

The work was completed on September 15, 1901.

The expenditure for 1901-02, was \$5,051.00.

CAMPBELLTON.

Campbellton, Restigouche, a thriving town with a population of 3,000 is situated on the southern bank of the Restigouche river, 14 miles above Dalhousie and 6 miles below head of tide. It is an important deal port (from which 21 million sup. ft., were shipped during the calendar year 1901) and a station on the Intercolonial railway.

For the reception of ballast of vessels engaged in the deal trade, the department, in 1889, constructed a block 140 x 34½ ft. of close face cribwork, 108 ft. below the then so-called Ferguson wharf, (now Shives'), and subsequently, in 1892, another block of same width and construction was built, to close the space between the Departmental and Ferguson works, the two blocks giving a frontage on the river of 250 ft.

After the construction of the Departmental wharf, the Ferguson work was sold to J. P. Mowatt, and by him to Kilgour Shives.

To have access to the Departmental wharf, the Shives' wharf has to be first traversed.

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During the session of parliament 1901, an appropriation was made for the acquisition of and repairs to the Shives' wharf, and during the year, materials for the work necessary were procured. The amount expended for and in connection with same amounted to \$2,251.82.

CAPE TORMENTINE

Cape Tormentine, Westmoreland county, at the extreme eastern end of Westmoreland county, is the most prominent headland on Northumberland Strait and the southwestern terminus of the winter ferry between Cape Traverse on Prince Edward Island and the mainland. Spring tides rise $7\frac{3}{4}$ ft., neaps, $3\frac{1}{4}$ ft.

Between 1886 and 1892, a breakwater pier was constructed with a view of forming an artificial harbour for purposes of interprovincial communication, at the extremity of a peninsula which is the nearest point on the continent to Prince Edward Island.

The harbour works comprise a straight pier 2,500 ft. in length with head and return, each 400 ft. long, inclosing a basin about 4 acres in area with a ruling depth of 11 to 13 ft. at low water or $18\frac{3}{4}$ to $20\frac{3}{4}$ at high water spring tides. For a distance of 1,300 ft. from the shore, the pier is a rubble mound 20 ft. wide on top with pitched slopes of 2 to 1, while the remainder of the straight portion (400 lin. yards) is built of close faced cribwork. 30 ft. in width. The head and return are of similar cribwork, but are 40 ft. in breadth from the base to low water, decreasing to 30 ft. at the finished top, (4 ft. above high water spring tides) and presenting a sloping face sheathed with hardwood to the east and south. The waters of this part of Northumberland Strait are infested with the teredo.

During the year 1898-99, the talus on the northern side, begun at the time of the construction of the work in 1890, was extended 500 ft. or to the end of the straight pier, and sundry repairs were made.

In 1899-1900, the talus was re-enforced and extended around the pier head, a distance of nearly 200 ft. The sheathing was renewed or re-laid. Close piles were driven on the inside of the work, and the sides of the ramp were planked.

In 1900-01 some repairs were made.

During the year 1901-02, a temporary quay face, 180 ft. long was constructed along the outer or southern face of the return of pier to afford landing facilities for the steamer 'Stanley' plying between Prince Edward Island and Cape Tormentine during the winter. (This work consisted of piles driven every 4 ft. outside of the sloping face and of hardwood cribwork tied into the old work.) Three face timbers and sheathing were placed in and on a section of 42 ft. of sloping face of return and another section of the head was treated in like manner. 5,109 cubic yards of large and small stone was deposited along the northern and eastern faces of approach and head; 361 creosoted piles were driven, generally $2\frac{1}{2}$ ft. apart along the harbour sides of the pier, and a building 100 ft. long and 20 ft. wide, divided in sections for waiting rooms and for the reception of freight, was constructed on the return portion of the pier, also 35,000 ft. B.M. of timber was delivered for the levelling up of 250 ft. of the work inward of the head.

The expenditure for 1901-02 was \$22,600.32.

CARAQUETTE.

Caraquette, Gloucester county, a thriving fishing settlement and a station on the Caraquette railway, is situated on the southern side of Bay des Chaleur, 42 miles east of Bathurst, the shire town of the country.

For the purpose of establishing a deep water terminus, for the shipment of lumber from Gloucester county, a contract was entered into in March, 1902, for the construction of a block and span wharf 1,700 feet long. At the end of June, 1902, some material had been delivered at the site and preparations were being made to start work. Expenditure during the fiscal year was \$419.39.

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CHATHAM.

Chatham, Northumberland county, a town with a population of about 6,000, is situated on the southern side of the Miramichi river, 6 miles below Newcastle, the shire town of the county. It is one of the principal deal ports of New Brunswick and a station on the Canadian Eastern railway.

The customs house wharf, so-called, at Chatham has a frontage on the Miramichi river of 112 feet and originally extended back, southerly, from 89 feet on the eastern to 171 feet on the western side. It consisted of cribwork walls, filled in between with ballast. With age, the timber work became much dilapidated and broken down. In May, 1900, repairs were undertaken by the department and at the close of the year the greater portion of the longer and upper side had been rebuilt from low water up, of close-faced cribwork 10 feet in width, and a considerable portion of the space between the upper and lower sides of the wharf graded.

In 1900-01 re-construction of the upper side was completed as well as the river face, the latter being similar in construction to the former.

During the year 1901-2, the land adjoining on the western side of the departmental property having been acquired, this side of the wharf was rebuilt for the length of 144 feet from low water up in the same manner as the upper side and outer face.

The wharf as it now stands consists of three walls, upper or western 171 feet long, outer or river face 111 feet long, and lower or eastern 144 feet long, all of close faced crib-work 10 by 10½ feet wide, filled with ballast, planked over on top and fendered on the outer faces, the area between the walls being all levelled off and a 12 foot driveway finished next to the crib work walls with gravel.

The expenditure for 1901-02 was \$1,112.07.

CHOCKFISH.

Chockfish river, Kent county, empties into the Northumberland Strait about midway between the entrance to Richibucto and Buctouche harbours.

With a view of diverting the course of the outlet of the river, which is obstructed by a bar at the mouth, to give a more direct entrance, and to afford shelter for fishing boats, the construction of a breakwater was commenced in the fall of 1901. It consisted of brush mattresses 30 feet wide on bottom, through which two rows of piles 7 feet apart were driven every 5 feet, and on top of which large and small stones were placed, generally up to level of high water. With the amount available, a length of 130 feet of work was constructed.

The expenditure for 1901-02 amounted to \$931.39.

CLIFTON.

Clifton, Stonehaven, Gloucester county, a station on the Caraquette railway is situated on the southern side of the Bay des Chaleur, 18 miles east of Bathurst, and 8 miles west of Grande Anse.

A breakwater originally 425 feet long and built by private persons was acquired by the department in 1878. During the same year, it was extended 325 feet making a total length of 750 feet with the outer 220 feet placed at an angle of 72 degrees with the shore portion. The work is constructed of round and square timber filled with stone and partly protected along the northern and eastern faces by a stone talus.

General repairs were made to the work in 1886-7, 1897-8, between 1891-3 and again in 1897-8. During 1891-3 and 1897-8, in addition to repairs, large stone, ½ to 1 cubic yard, was placed along a portion of the northern and eastern faces to south and west of the angle.

In 1898-9, ordinary repairs were made to fenders, covering and break. In 1899-1900, two bad openings in the eastern face, 16 and 19 feet in width, were closed and other repairs made. During the same year, materials were procured and partly framed for building a block 70 x 40 feet at the western end for the purpose of stopping the talus.

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During 1900-1, framing of the timbers for the proposed block was continued ; the top of the old work for length of 103 feet and width of 16 feet was repaired.

During 1901-2, 719 cubic yards of stone were placed along the outer 180 feet of the eastern face and along the northern face to within 100 feet of the western end. Inward of the 180 feet of eastern face, 60 feet of the stone talus was hand-laid forming a permanent work.

On the outer portion or L (200 feet) the whole of the old covering was removed, 4 new rows of longitudinals and 42 new cross ties were placed, after which new covering was laid for a length of 112 feet and old covering that was sound, re-laid for remaining distance. 40 feet of new caps were renewed and 160 feet re-laid along the inner face, and 22 new fenders placed. A tramway was built along the outer face inward of break, and two timbers 14 feet long were inserted in, and 8 new fenders 16 feet long placed on the outer faee.

In the western face of approach, new timbers 16 feet long were inserted in and six 10 x 10 fenders placed over the same portion. A ladder was also placed on western face near the angle of the work.

The substructure of block of close-faced timber-work 70 x 40 feet was constructed 11 tiers or 9 feet 2 inches high, and successfully placed at the western end of the break-water.

The expenditure for 1901-2 was \$2,991.28.

COLE'S POINT.

Cole's Point, Westmoreland county, in parish of Dorchester, is situated at the head of Shepody Bay on the eastern side and at the mouth of the Memramcook river, and is distant about 3 miles south-west of Dorchester, the shire town of the county.

To facilitate the shipment of lumber, to act as a protection for vessels, and as a landing for the ferry service between Hopewell Cape and Cole's Point, a contract was entered into in 1901 for the construction of a wharf. The work is to be 638 feet in length and to consist of :

- (a.) Round or open cribwork 180 feet long and 20 feet wide on top.
- (b.) Round or open cribwork 260 feet long and 25 feet wide on top.
- (c.) Round or open cribwork 168 feet long and 30 feet wide on top with double face timber and sheathed sides, and
- (d.) A pier head 33 feet high, 60 feet long and 30 feet wide on top, having double faces and sheathed all around.

Construction was commenced in April and at the end of the fiscal year the work had been built up to a height of 18 feet or 21 tiers at outer end, and carried inward a distance of 176 feet, the outer 80 feet being built up an average height of 17 tiers and the remaining portion, 96 feet, an average of 7 tiers.

The expenditure to the 30th June 1902 amounted to \$4,405.99.

DALHOUSIE.

Dalhousie, Restigouche county, with a population of about 800, is situated on the southern bank of the Restigouche river, 14 miles below Campbellton. It possesses a harbour well sheltered with from 6 to 7 fathoms at low water, and is considered one of the best in New Brunswick.

At the terminus of the branch of the Intercolonial railway and immediately above the railway wharf, the department in 1887-8, constructed a ballast wharf 300 feet long and 23 feet wide on top with a depth of 15 feet along outer face, at low water. The latter has, however, since been reduced 5 feet by shoaling. Spring tides rise 10 feet.

The deal shipments from Dalhousie during 1901 amounted to 18,966,980 superficial feet.

Repairs made necessary by the expansion of ice, which sheared off the top, were made in 1891-2-3, in 1895-6 and again in 1897-8-9, when, at the latter date, from 118 to 170 feet of the top was forced off nearly to low water.

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Repairs and reconstruction commenced in 1897-8 were completed during the year 1901-2. One new set of longitudinals, one of cross ties, floor stringers and 6-inch covering were placed over the lower 135 feet of the work ; 38 fenders were placed and 52 piles driven along the outer face and upper end of wharf ; four fenders were retopped from low water to top of work and 3 new mooring posts braced and secured in the work.

The expenditure for the year amounted to \$999.50.

FORT DUFFERIN.

Fort Dufferin, St. John county (St. John harbour), a 10-gun battery built by the Imperial government to command the western entrance to St. John harbour, stands on a high ground immediately above the end of Negropoint breakwater. In order to preserve from erosion, by the waves, the headland crowned by the battery, this department began in 1882, at tide level, a retaining wall of sheathed cribwork 430 feet in length, and in the following year constructed a further length of 303 feet. The work is exposed on the one hand to the force of the waves, and on the other, to land slips.

In 1886-7, it was much disturbed by the sea and repairs were made in that and the following years, 205 feet of the original work being rebuilt. From 1887 to 1889 repairs were also made, and in 1890 the work was extended 100 feet.

General repairs were made in 1893-4. The work is from 7 to 14 feet wide on top, and about 9 feet in mean height. The crest for the whole length is surmounted by a break $2\frac{1}{2}$ feet high.

During the year 1896-7, a gap 81 feet long in the break was repaired, 200 lineal feet of longitudinals were renewed inside, and 128 cubic yards of ballast were restored to the work. In order to raise the beach, and so protect the lower part of the face, towards the end of 1896, a groyne 40 feet long, 10 feet wide and 4 feet in average height was built of hardwood piles, timber and stone. In 1897 extension of the cribwork a distance of 130 feet was begun, and by the end of that fiscal year had been brought within two tiers of the full height.

In 1897-8 the new extension was completed, ballasted and sheathed. Small repairs were also made to the sheathing of the old work.

1898-9 four groynes, in all 232 lineal feet, each built of hardwood piles spaced 4 feet apart, driven from 9 to 12 feet into the bottom and planked with birch 9 inches square, securely strapped and bolted, were placed along the beach to protect the lower part of the sheathing of the breastwork ; some ballast was also placed in the crib-work.

Ordinary repairs comprising restoration of a breach in the face, ballasting and renewal of sheathing, were made during the year 1889-90.

In 1900-1 the face was sheathed for 145 feet ; and other repairs made.

In 1901-2, 136 spruce piles, 26 feet long, were driven from 6 to 8 feet into the bottom for a distance of 108 feet along the face of the breastwork. In another place, for a total length of 126 feet, the face was sheathed with 6-inch spruce, and the old sheathing was patched at intervals for a length of 210 feet. A break 3 feet in height was also constructed of 4 tiers of spruce timber, supported at intervals of 10 feet by 21 framed braces, made of 8 x 8 spruce. Some brush was deposited at the back of the innermost block of cribwork, and beneath the adjacent groyne, for the purpose of assisting the accumulation of silt and drift, at a cost of \$2,497.12.

GRANDE ANSE.

Grande Anse, Gloucester county, a settlement with a population of between 700 and 800 and a station on the Caraquette railway, is situated on the southern side of Bay des Chaleur, 25 miles north-east of Bathurst, and 15 miles west of Caraquette.

For the shelter of fishing boats, the department, in 1876, commenced the construction of an isolated breakwater, between 500 and 600 feet from the shore, and subsequently extended same making it 397 feet long, 159 feet of which forms a shore arm and the remainder, 238 feet, nearly at right angles to the former, a head with a sloping face of 1 to 1 on the north or seaward side.

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In order to give increased protection to the fishermen, a contract was entered into during 1901-02 for an extension of 250 feet, measured on top, from the inner end of the present work shoreward, and for the removal of material which has accumulated inside the harbour formed by the original work.

At the close of the fiscal year, 1902, the extension had been constructed eleven tiers or 9 feet 2 inches high at outer end, 5 feet 10 inches or 7 tiers high at inner end, or an average height of ten tiers over distance of 257 feet—the required length of work on bottom, ballasting same and removing 30 cubic yards of material from the harbour side of the old work.

Repairs to the old breakwater were also carried on.

The expenditure for the fiscal year 1901-02 was \$5,740.85.

GRAND FALLS.

Grand Falls, Victoria county, immediately below Grand Falls, a projecting point of rock, which caused an eddy and hindered the passage of timber, was blasted. Two thousand cubic yards of rocky reef were removed at this place by an expenditure of \$1,156.76.

GREEN RIVER.

Grand River, Madawaska county, at Second Falls, rocks interfering with the passage of Green river were blasted. Similar work was done at First Falls and Third Falls on the left hand branch.

The total expenditure on Green river for 1901-02 amounted to \$300.

HOPEWELL CAPE.

Hopewell Cape, in Albert county, near the mouth of the Petitcodiac, and at the head of deep water navigation, is one of the several works on that large tidal river intended for the convenience of shipping.

In 1901 the construction was begun of a new wharf intended to be 460 feet in total length, consisting of an approach of round cribwork 210 feet long, together with square cribwork 250 feet in length, including a pier-head 50 by 35 feet on top, and 48 feet high. Spring tides rise 45 feet.

By the end of the fiscal year the approach, 210 feet long and 26 to 30 feet high, had been almost completed, and the pier-head had been built 15 tiers in height, while the square crib-work had been extended to a length of 210 feet.

The expenditure on the new wharf for 1901-02 amounted to \$5,002.50.

HOPEWELL HILL.

At Hopewell Hill, in Albert county, on Shepody river, an arm of the Petitcodiac, a contract was let in 1900-01 for the erection of a new public wharf of round crib-work. Construction was commenced in June, 1901, and the work was completed in November of the same year. The wharf, 101 feet in total length, consists of a stone approach 24 feet long and 30 feet wide on top, 2 blocks each 20 x 40 feet, and two intervening spans of 15 feet. The blocks are of open cribwork, planked on top, and fendered on the sides.

The expenditure for 1901-02 amounted to \$4,031.30.

LAMEQUE.

Lameque, Gloucester county, is a fishing settlement on Shippegan island on the eastern side of Shippegan harbour, from which place large shipments of fish are made annually.

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In 1899-1900 a contract was entered into for the construction of a wharf 990 ft. long consisting of an approach or shore block 220 ft. long and 25 ft. wide, 16 blocks 25 x 25 ft., 17 spans of 20 ft., and a pier head 30 x 40 ft., the latter having a depth at the outer end, at low water, of 9·8 ft.

At the close of the year 1900-1 the shore block was constructed up to level of $1\frac{1}{2}$ ft. above high water, and the first five blocks from 1 to $1\frac{1}{2}$ ft. below level of high water. Spring tides rise 5·8 ft.

At the close of the year 1901-2, the progress of the work was as follows:—the approach and blocks 1 to 6 were completed ready to receive stringers; blocks 7 to 11 constructed to level of low water; block 12 to within 6 inches, and block 13 to within 2 ft. of low water; block 14 to 3·3 ft., and blocks 15 and 16 to 2 ft. above low water.

During the spring of 1902, owing to the ice not forming solid, (the winter being an exceptionally open one) the work, during a heavy north-westerly blow, was severely damaged by the drifting ice being forced against it, with the result that the upper 6 to 7 tiers of timber were forced off blocks 7 to 10, inclusive, 4 tiers off block 11, 6 tiers off block 12 and 7 tiers off block 13. The portions of the blocks sheared off are not included in the progress of the work ending June 30, 1902. Arrangements, however, were being made by the contractor to replace and properly secure the tops, which were intact, to the lower portions of the blocks.

The expenditure for 1901-2 was \$3,617·50.

LORD'S COVE.

Lord's Cove, Charlotte county, a small fishing settlement on Deer Island, is a port of call for steamers plying between St. Stephen, St. Andrews, Eastport and other points in Passamaquoddy bay. To afford facilities for steamers, the construction of a wharf was begun in 1900-1.

The wharf is intended to be a pile and trestle work, 328 feet long and 21 feet wide, with a pier-head 33 feet in height. By the end of that fiscal year, 12 trestle bents and 3 pile bents had been erected; a rock cutting at the shore had been carried through, and the stone embankment at the shore end had been partly made. The expenditure amounted to \$1,000.

By the end of 1901-2, nearly all the materials required to complete the work had been procured, and 120 feet of the pile and trestlework had been erected and ballasted. Some further bolting of the bracing and walings was also done.

The expenditure for the year amounted to \$1,000.

MISPEC.

Mispec, St. John county, is situated on the north shore of the Bay of Fundy, 8 miles east of St. John in the county of that name. Near the outer end of a narrow cove, which receives the discharge of Mispec river and constitutes the harbour, the department built on the west side, in 1885, a breakwater, 197 feet long, 25 feet in mean width and 30 feet high at the outer end.

Repairs were made in 1889-90 to the seaward face, and again in 1892-3. In consequence of the establishment of a pulp mill, capable of producing 40 tons per day and employing 150 hands, repairs to the work were begun in 1898-99, when a sum of \$800 was expended in procuring materials: in replacing 7 tiers of the face for a distance of 74 feet along the work with heavy birch timber, 16 inches square, secured by screw bolts, and in ballasting the work.

The breakwater was, however, found insufficient for the protection of the rafts of pulp wood and of the schooners and lighters engaged in carrying coal, sulphur and limestone to the mill, or in transporting pulp when manufactured from the mill to St. John for shipment.

On this account, a contract for a new breakwater, to be placed on the east side of the entrance, was let in 1900-1. In the same year, preparations for the foundation of the work were begun by benching the rough rock, at an expenditure of \$743·57.

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In 1901-2, the new breakwater, 168 feet long, 34 feet wide on top, 50 feet wide at bottom and 30 feet high at the outer end, was completed.

At the same time, the original work on the west side was repaired and raised to the same height as the new breakwater; 79 feet of the sloping face were sheathed with 6-inch spruce plank; a new set of longitudinals was laid for part of the length of the work, and a new set of cross-ties, stringers and covering for the full length. The outer and inner faces were constructed of square timber for a height carrying between 2 and 6 tiers, and the inner face, outer end and outer face were fendered. Additional ballast was also placed in the whole of the work.

The expenditure for the year 1901-2 was \$1,969.46.

NEGROPOINT.

Negropoint (St. John) is a headland about 60 feet above high water mark at the western entrance to St. John harbour, which is formed by the estuary of the river St. John on the northern side of the Bay of Fundy. Spring tides rise 25.33 feet, neaps 15 to 20 feet.

In addition to convenience of position for distribution by rail of cargoes landed at the city of St. John, the harbour is remarkable principally for great tidal range, and for consequent freedom from ice in the winter months. The harbour is open, broadly speaking, from south-east to south-west, but southerly winds are broken by Partridge Island, and south-west waves are mitigated by Negropoint breakwater, while the Foul Ground, a shoal tailing down from the peninsula on which the city is built, must have more or less effect in moderating the force of the easterly seas rolling round Mispic Point.

By Partridge Island, a rocky eminence devoted to quarantine and lighthouse purposes, the entrance of St. John harbour is divided into east and west channels. In the former or main channel, a minimum navigable depth of 19 feet is found on the bar at low water at ordinary spring tides. Two hundred yards inside the crest of the bar, a depth of 5 fathoms is obtained in the narrow fairway, while higher up and between the most southerly of the principal wharfs on either side of the harbour (450 yards wide at that point), 12 fathoms are given in mid-channel. The west channel, 1,200 yards wide, has been contracted to about as many feet in breadth by Negropoint breakwater, which extends 2,200 feet S.E. by S. from the headland so styled.

The breakwater consisted at first of a cribwork core, 30 feet wide at the base, and 15 feet wide at the top, (5 feet above high water ordinary spring tides), protected on both sides by large stones sloping to seaward at the rate of two to one, and landward at the rate of one to one. In the month of February 1879 thirteen hundred lineal feet of cribwork were swept away to a depth varying between 13 and 19 feet from the top, the stones having been raked down by the wave action to a slope more nearly resembling the angle of repose of the material. In 1880, temporary repairs were made, and in 1881 a contract, completed six years afterwards, was entered into whereby the lost cribwork was replaced by heavy stones and the seaward slope made three to one. From 1891 to 1894 desultory repairs were made by the addition of large stones, chiefly deposited about the end to prevent the lighthouse from being undermined.

In May and June 1895, seven concrete blocks, founded at about the level of low water neaps, were built *in situ* around a quadrant of the outer end to receive the foot of a slope proposed to be made of heavy granite blocks laid at the rate of four to one. The concrete blocks were from 59 to 91 tons each in weight, all but the heaviest being laid in one tide. The granite pier was also reinforced by a semi-circular skin of concrete 7 feet in average thickness and strongly battered around the front, and brought to the level of high water springs. The footing blocks were 15 feet long, 12 feet wide and, unless varied for the sake of the foundation, 3 feet high in the face, sloping upward at the rate of four to one on the top.

In order to retain, for natural protection, along the seaward face of the work, the littoral drift formerly swept by the waves over the top into the harbour, a break of

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piles, brush, stone and timber, 270 feet long, 8 feet wide and 4 feet high, begun in 1895, was completed in 1896-97 and was extended 140 feet along the timber work that year with good effect.

During the year 1897-98, as a measure of precaution, 152 yards of granite were obtained and deposited about the lighthouse for protection during the winter, while stones, previously removed by the sea, were replaced in position.

The advance of the foreshore rendered necessary in that year the enlargement of the timber break, which was extended a distance of 80 feet along the breakwater.

A small groyne was also built for the purpose of obtaining some information as to the quantity of the littoral drift near the shore end. To preserve the timber the top of the piles and the knees of the break were given two coats of pitch.

One thousand and nineteen cubic yards of granite were supplied and laid in place in 1898-99; while 285 yards of the original stone of the work, displaced by the sea, were restored to position.

During 1899-1900 four hundred and fourteen cubic yards of granite were delivered and placed around the lighthouse. Six hundred and six cubic yards of dislodged stone were put back. Five concrete blocks, containing 52.1 cubic yards were also laid in place.

In 1900-01 five blocks of concrete aggregating 54½ cubic yards were built *in situ*; 1,313 cubic yards of new granite were received and placed, while 1,893 cubic yards of the original stone of the breakwater, removed by the sea (which on the 8th of November, 1900, made two clear breaches through the work), were restored to position. The timber break was also extended two tiers for a distance of 40 feet.

During the present fiscal year (1901-02), four thousand six hundred and ninety-four cubic yards of large stone, principally granite, together with 719 cubic yards of small stone, were delivered and placed in position. A number of large stones of the original work, amounting to 1,713 cubic yards, which had been dislodged by the sea, were restored to place by means of a floating steam derrick. Repairs were also made to the derricks and buildings, at a cost of \$19,978.19.

POINT WOLFE.

Point Wolfe, Albert county, is a small natural harbour on the north shore of the Bay of Fundy, about 57 miles east of St. John. The river mouth gives an in-draught from the bay, 1,800 feet long and 700 feet wide. The harbour lies at the upper end of the embouchure, and is formed by a beach or bar thrown up by the sea, 1,000 feet long, 200 feet wide, and 14 or 15 feet higher than the flats. The crest of this bar became denuded by the waves to the detriment of the basin inside.

A contract was accordingly let in 1900-01 for the erection of protection works 880 feet in length, intended to prevent further denudation and to effect restoration of the beach to the original height.

Construction of the work, which consisted of pile-bents, 8 feet apart and 11 feet wide, partially filled with brush and stone and designed to collect the littoral drift, was begun in October and completed in December, 1901.

The expenditure for 1901-02 (and the total) amounted to \$3,077.53.

REXTON.

Rexton, formerly Kingston, Kent county, with a population of about 1,000, is situated on the eastern side of the Richibucto river, about three miles from the town of Richibucto.

During 1891-2, the department constructed a work immediately above the public highway bridge to serve the double purpose of a guard pier and local wharf. It is 204 feet long and 35 ft. wide on top and built close-faced of square timber. Access from the bridge is had by an approach of cribwork 111 feet long and 20 feet wide on top.

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During the construction of a new bridge across the river at Rexton, a few years ago, a large amount of stone for same was piled on the wharf with the result that considerable settlement was caused, and this with the decayed condition of the covering and upper timbers made the work unserviceable.

During the year 1901-02 the stringers, covering and cap timbers were renewed and additional timbers inserted to level up. The expenditure for the year was \$705.44.

RICHIBUCTO.

Richibucto, Kent county, lies on the eastern side of Northumberland Strait, about midway between the entrance to the Miramichi and Shediac. It is a deal port and the terminus of the Kent Northern railway.

The entrance to the harbour is between two sandy beaches, north and south. The works originally proposed for the improvement of the harbour were two breakwaters, one to extend from the southern point of the north beach 1,200 feet, and the other to run in a north-easterly direction from the south beach, the object being to confine the water to one permanent channel and so scour the bar at the entrance.

In February, 1873, the north pier was constructed for a distance of 1,200 feet. In 1876, it was found that the sea during easterly storms followed the inside of the breakwater, swirled around the upper end and endangered the beach. From 1880 to 1882 protection works were extended westward along the face of the beach to prevent erosion. Extensions in the same direction were continued in 1888, 1889, 1890 and 1891 for lengths of 200 feet, 300 feet, 94 feet and 140 feet respectively. The works are now 2,158 feet in length and are composed principally of brush, stone and piling.

Repairs to the inner part of the eastern section were undertaken during the year 1898-9, and at the end of June a section of 238 feet was nearly re-constructed and another 593 feet partly repaired and raised 3 feet.

In 1899-1900, the work, commenced the previous year, was completed. Off the harbour face, a pile, brush and stone groyne, 33 feet long and 15 feet wide, was constructed and another of the same length rebuilt. Off the inner face, two brush groynes, each 191 feet in length, were built, and off from the northern face of the breakwater near the outer end, a new breastwork 470 feet long and 8½ feet wide composed of pile framework sheathed on the outside and filled with brush and stone was constructed.

In 1900-1, a steam derrick was built for pile driving and hauling large stone, extensive repairs were made, and three additional stake and brush groynes aggregating 262 lin. feet were built off the inner face of the eastern section.

In 1901-2, work was resumed by day labour on August 1, and so continued until the end of September. It was then closed down owing to difficulty in procuring materials, and tenders were called for the completion of the work.

During July and August, 130 feet of an extension, proposed to be 315 feet long, was made off from the harbour side of the pier, 300 feet inward of the outer end. This consisted of brush mattresses placed on bottom, weighted with small stone and finished with large stone sloping 2 to 1 on the sides. Three rows of piles were also driven 5 feet apart longitudinally and 4 feet transversely for a distance of 130 feet.

In February, 1902, a contract was entered into for the completion of the extension and protection work of the outer section. Work was commenced the latter part of May, and at the end of the fiscal year 4 mattresses 60 x 26 feet had been placed along the section forming the protection, 20 piles were driven in the extension and 280 cubic yards of core stone was delivered and placed in the work.

During June, repairs were also made under day labour to the section of the work to the east of that under contract. This consisted of inserting and renewing 48 pieces of 7 x 8 face timbers 9 to 20 feet long, driving 5 piles along the outer face and placing 111 cubic yards of stone in the work.

The expenditure for 1901-2 was \$6,408.86, of which amount \$2,200 was paid on contract work.

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RIVER ST. JOHN AND TRIBUTARIES.

The River St. John proper, 450 miles long, takes its rise from sources in the province of Quebec and State of Maine, at a reputed maximum altitude of 2,159 feet above sea level. Entering New Brunswick at the confluence of the St. Francis, a little below the borders of Quebec, it continues to be the international boundary almost to Grand Falls, and after flowing through the province for nearly 300 miles (by way of the counties of Madawaska, Victoria, Carleton, York, Sunbury, King's and Queen's) discharges into the Bay of Fundy at St. John. Many tributaries, some being of considerable magnitude, are received by the main stream. Among them are the St. Francis, Madawaska, Green River, Grand River, Salmon River, Aroostook, Tobique, Presqu'Isle, Maduxnakeag, Eel river, Nackawick, Keeswick, Nashwaak, Oromocto, Jemseg (Grand Lake), Washademoak, Belleisle and Kenebecasis. Except the last five, which are slightly tidal for some distance, they are fresh water streams.

The St. John is considered navigable for vessels of 15 feet draught for a distance of more than 50 miles from the mouth, but no positive information on this point has yet been obtained. About 8 feet at low water can be carried to Fredericton, 84 miles from the sea, and 6 miles below the head of tide at Springhill. Three natural features of the river are remarkable, viz. :—

The tidal falls, grand falls and the annual floods.

Although in summer the fresh water stream between Woodstock and Fredericton is in places 400 to 1,000 feet wide, expanding at the latter place, after reaching the tide level, to half a mile in breadth, yet the actual mouth of the river, a rocky gorge 400 yards long, immediately at the head of St. John harbour, measures but as many feet across at high water. Here at low water, the level of the river is from 11 to 15 feet above the sea, and as the ordinary tides flow from 23 to 27 feet, the sea level at high water is from 8 to 13 feet higher than the waters of the river. Thus there are two falls at every tide, viz. :—one outward and one inward, and vessels can only pass when the waters of the ocean and river are on a level. This occurs only for a space of about 10 minutes during each ebb and flow of the tide; at all other times it is either impassable or extremely dangerous.

At Grand Falls, 223 miles from the sea, the whole volume of the river plunges over an almost perpendicular face of limestone 60 feet high, into a deep ravine 250 feet across, somewhat similar to the narrow pass at St. John. Flanked for nearly a mile by lofty rugged cliffs, the confined current dashes from the foot of the falls with excessive strength, mining deep pot holes in the rocky bottom of the channel in the course of a further descent, estimated to be slightly less than the first. In the harbour of St. John, ordinary spring tides are considered to rise $25\frac{1}{4}$ feet.

The harbour of St. John is open all the year round, but the river is ice-bound from November to April, an average period of 144 days.

For the purpose of works, three divisions may be made of the river :—

1. Tidal navigation, for steamers and sailing vessels, between St. John and Fredericton, 84 miles, requiring 11 feet at low water. Principal obstructions, the Oromocto shoals, about $1\frac{1}{2}$ mile; and the shoals abreast Fredericton, rather more than $\frac{1}{2}$ mile in length. The last are now dredged, but the other obstacles remain.

2. Inland Navigation, from Fredericton to Woodstock, a distance of about 65 miles, requiring $3\frac{1}{2}$ feet at low water. The obstacles to inland navigation, besides boulders in some places and perhaps bed rock at Meductic, are shoals of material more or less coarse, according to the strength of the current, varying in composition from sandy gravel to stones.

3. The Upper River, including with the tributaries all that part above Woodstock. This division is now used for the passage of timber only. On some of the tributaries beyond the reach of railways, supplies from the lumber camps are transported in tow boats, for which channels are required to be made and tow-paths provided.

Tidal Navigation.—The tidal compartment of the River St. John comprehends, besides the main stream navigable by steamers, which run daily between St. John and

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Fredericton, a distance of 84 miles, four tidal arms, all navigated by wood boats and regular passenger steamers, the extent of the whole tidal navigation being as follows :—

	Miles long.
Main River, St. John,	84
Kennebecasis.	24
Belleisle Bay.	12
Washademoak Lake.	27
Grand Lake and Salmon River.	35
Total extent	182

For the convenience of steamers and other craft navigating the main river and its branches, the provincial government has erected a number of wharfs, towards which the department has made contributions amounting to one-half the certified cost.

During the year 1901-02, assistance was given to a number of these wharfs.

Inland Navigation.—Repairs, extending over 18 miles, were made to the tow-paths in the neighbourhood of Southampton, York county. Three bridges were rebuilt ; a number of rocks were blasted ; and a quantity of grading and clearing was done.

The expenditure for the year 1901-02, amounted to \$3,254.28.

ST. ANDREWS.

St. Andrews, Charlotte county, the county town of Charlotte, lies by the water 50 miles west of St. John. The site of the town was part of the seigniory of Passamaquoddy granted to St. Aubin in 1684. It was settled by the loyalists a hundred years later, and was for some years a place of some consideration, a military post, a fishing station, and a port of direct trade with the West Indies. The town, situated at the mouth of the St. Croix, on a point of a peninsula stretching into Passamaquoddy Bay, is well laid out, and has a population of about 1,200. In the summer season, St. Andrews is a favourite watering place much frequented by American visitors.

The harbour, sheltered by Navy island a mile in length, affords about 8 feet at low water, or 33 feet at high water ordinary spring tides.

Repairs to the public wharf, an old structure of round cribwork 489 feet in length, built many years ago, were begun by the department in the spring of 1902. By the end of the fiscal year, 16 bents (a distance of 142 feet) of the new work had been erected ; ballast poles and guard timbers had been laid for 128 feet, and the top had been ballasted for 90 feet.

The expenditure to June 30, 1902 (and the total expenditure) amounted to \$1,822.89.

ST. FRANCIS.

St. Francis, Madawaska county, on the St. Francis ; rocks were blasted and channels excavated between the mouth and Beau Lake, a distance of 10 miles, at an expenditure of \$200.00.

ST. GEORGE.

St. George, Charlotte County, formerly called Magaguadavic, a small but flourishing town containing with the parish about 3,000 inhabitants, and situated at the head of the tide on the river of that name, is chiefly noted for lumbering and for the monumental works established there to manufacture red granite of the neighbourhood. On account of the fine water power, due to the great fall, immediately at the village, from fresh to tidal water, a pulp mill is now in course of erection.

A public wharf, built by the county in tidal water, was partially repaired during the year 1901-02, by the department. This old wharf of round cribwork, 127 feet long, and 39 feet wide, stands, at the head, in 24 feet at high water ordinary spring tides.

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The repairs consisted in rebuilding and raising the principal part of the wing of the wharf, 48 feet long and 20 feet wide, and in repairing the approach 26½ feet long and 38 feet wide.

The expenditure for the fiscal year 1901-02 (and the total expenditure) amounted to \$499.92.

ST. MARY'S.

St. Mary's, Kent county, is situated on the Buctouche river, 7 miles above the village of the same name.

In 1884, the department constructed a wharf 125 feet long and 18 to 37 feet wide off from the public highway bridge. The work is built open cribwork of round timber, is planked over on top, and has a depth on outer face of 7 feet at low water. Spring tides rise 3½ feet.

During the spring of 1892, extensive repairs were made.

The expenditure for 1901-02 was \$598.02.

SHIPPEGAN.

Shippegan gully, Gloucester county, a passage between Shippegan island and the mainland, is situated on the western side of the Gulf of St. Lawrence and is distant 3 miles south-east of Shippegan village, the terminus of the Caraquette Railway, the latter being distant by rail 65 miles from Bathurst, the shire town of the county.

For the purpose of improving the entrance or gully, works were commenced in 1875 for the construction of a breakwater on the eastern side and a dam 890 feet long to close what was known as the eastern gully. From 1875 to 1890 the works were confined to the eastern side, and at the latter date consisted principally of a pier or breakwater at the point and a breastwork along the northern face of the beach, the whole 1,220 feet in length, one-third being of cribwork and the remainder of brush and piling.

In 1880-81 and again in 1883 the dam was repaired, raised and strengthened, and in the latter year the pier was repaired and extended 120 feet.

General repairs were again made in 1883-84 and in 1886-87, while in 1888-89 an additional block of 50 feet was added to the outer end.

Until 1890-92 only one pier had been built, therefore no material improvement of the entrance was effected. At that period a contract was entered into for the construction of a pile-work filled with brush and stone 1,194 feet long off the western beach, and the re-construction of a length of 137 feet of the outer portion of eastern work.

In 1892-93 and 1893-94 repairs were continued.

In 1897-98 general repairs to all the works were made.

The extensive repairs begun in 1897 were continued until the winter of the following year. By that time the dam had been raised 3 feet for a distance of 452 feet and extended a distance of 185 feet. On the southern side of the dam, about midway of same, an apron of brush and stone 375 feet long was placed to stop the leaks, and on the northern side 10 rows of stakes or hand-piles were driven in such manner as to form groynes to arrest the drift of seaweed and sand and thus give protection to the work.

In order to confine traffic, between the eastern end of the dam and Fruing & Co.'s fishing establishment, to one track, instead of several which were becoming runnels, 4 hurdles 155 feet in total length, 2 pieces of brush, stake and gravel work, one 12 x 60 x 3 feet and the other 13 x 46 x 4 feet, were constructed, and to close an opening in the harbour side of the beach, immediately to the east of Fruing's, a pile-bent structure 120 feet long enclosing fascines, brush and stone, and a further length of 119 feet of brush and stone only, was built.

Near the inner end of east pier 63 feet of pile-bent work, braced longitudinally and transversely with caps and walings and filled in with brush and stone was constructed. Between this work and the pier-head, one breach of 22 feet, one of 62 feet and another of 70 feet were closed with piles, fascines, brush and stone. In the pier-head a gap of 90 feet was closed by a close-faced cribwork block and a pile and brush work, each 45 feet in length, and other repairs were made.

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In 1899-1900 repairs were continued to the outer 90 feet of east breakwater. A length of 455 feet of old work, inward of the 90 feet, was rebuilt with fascines, brush and stone. A pile groyne 26 feet long was constructed on harbour side of work and another 220 feet long of brush, stake and gravel on seaward side. Minor repairs were also made to other portions of the work on the eastern side. The dam was raised a height of 3 feet with brush and stone for a length 495 feet, an apron 476 feet long and 8 feet wide was placed along the southern face and an extension of 17 feet was made to the eastern end, from which latter a groyne 175 feet long was built running in a southerly direction or nearly at right angles to the dam.

During 1900-1 a new pier-head 44 x 34 feet of piles, brush and stone was built at the outer end of eastern work to protect and prevent undermining of the old pier-head. Breastworks 200 feet and 92 feet long were built on the outer and inner sides of the original breastwork on the west beach. 190 feet of the eastern side of the western pier was sheathed horizontally between high and low water. 40 diagonal braces were inserted in the work. An extension of 100 feet was made to inner end, consisting of piles backed up with brush and stone.

During the fiscal year 1901-2 the following work was performed :—

East Side.

Seventy-eight cubic yards of stone were placed in the outer block of breakwater, and the close-piling of the seaward faces of the block inward of the outer one was rebolted.

One groyne 48 feet long and 5 feet 3 inches high, consisting of 13 piles sheathed with 9-inch hardwood, was constructed on the harbour side of the work, 1,070 feet inward of the outer end. Another groyne of similar construction was commenced 270 feet farther out. In this the piles were driven and the sheathing partly placed. The work to the east of Fruing's was sheathed with 3-inch deals, and between this and the eastern end of the dam, a distance of 1,826 feet, a beach protection work was constructed consisting of 4-inch stakes driven 4 feet apart transversely and longitudinally (with hurdles every 40 feet), and the interior filled in with alternate layers of brush and gravel.

The dam was raised, over a distance of 350 feet, $3\frac{1}{2}$ feet with brush and stone.

West Side.

To breakwater :—Sixteen piles were driven at outer end and fifty close piles on the eastern and western sides inward of the old close-piling. The pile bents of the outer 130 feet were stayed with 26 diagonal braces. The outer 30 feet was partly filled with brush and stone, and the outer 130 feet was close sheathed horizontally, for a width of 5 feet above low water, with 9-inch hardwood to prevent chafing of the work by ice in the spring.

A groyne 48 feet long was constructed on the harbour side near inner end consisting of 13 piles faced with 9-inch hardwood. Nine piles for extending the groyne 40 feet were also driven but not sheathed.

An extension of 157 feet of close piling, backed with brush and stone, was made to the inner end.

Before the construction of the western breakwater, the depth at the entrance to Shippegan harbour was not more than from 1 to 3 feet at low water. After the construction of the western breakwater in 1890-2, the extension of the eastern work, the construction of protection works on the eastern and western beaches, the closing of runnels, and the raising of the dam, since 1897, all with a view of concentrating the flow of water through one outlet (the gully), have had the effect of deepening the entrance to such an extent that in August, 1901, a schooner drawing 10 feet was reported to have entered the harbour at low water.

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The improvement thus effected is such that all the fishing fleets of Caraquette and Shippegan are now enabled to go to and from the fishing grounds via the gully instead of, as formerly, around Miscou, saving not only a run of about 50 miles, but a gain of at least two days extra fishing during the week.

The expenditure during 1901-2 was \$4,649.77.

TOBIQUE RIVER.

Tobique river, Victoria county, one of the most important tributaries of the St. John, a quantity of loose rock, approximately 550 cubic yards, was removed from the channel of the river below the dam at Plaster Rock, and on the left hand branch of the Tobique, three ledges were excavated, one 60 feet long, 6 feet wide and 2 feet deep; and a third 50 feet long, 7 feet wide and 2 feet deep. Twenty boulders, from 1 to 4 cubic yards in extent, were besides blasted, the whole work being performed at cost of \$444.62.

On the Serpentine, a branch of the Tobique, river improvements extending half a mile below and a mile above Serpentine Falls were made, 60 boulders, each from $2\frac{1}{2}$ to 3 cubic yards, being removed at a cost of \$250.

TRACADIE.

Tracadie, Gloucester county, is situated on the western coast of the Gulf of St. Lawrence, about midway between Shippegan gully and the entrance to Miramichi bay. It is one of the several large lagoons situated on the east coast of New Brunswick, separated from the sea by long sandy beaches and entered only by narrow channels termed gullies. Of these there are three, known as the north, south and old gullies.

The harbour is some 6 miles in length by $\frac{1}{4}$ to 1 mile or more in width, but except in the river channels (north and south Tracadie rivers) and in the channels entering from the different gullies, is quite shoal being almost dry at low water spring tides.

In 1894, the department, to provide shipping facilities for the district, which is a large and populous one containing upwards of 2,000 inhabitants, constructed a wharf 1,430 ft. long and 25 ft. wide consisting of blocks and spans as follows:—Shore block or approach 250 ft. long, 28 blocks, 20 x 25 ft., pier head or outer block 40 x 25 ft., and 29 spans or openings of 20 ft. The work was constructed of open cribwork of round timber and the top covered with 3-in. plank.

During 1900-01 a crib-work block 55 ft. long and 27 ft. wide on top, lying immediately beyond the outer end of the departmental work, was repaired and connected with the main structure and some repairs made.

During the year 1901-2 the laying of diagonal covering for a width of 10 ft. 1 in. was continued and completed over a distance of 1,318 ft.

The expenditure during 1901-2 was \$512.10.

UPPER CARAQUETTE.

Caraquette Oyster Grounds or Upper Caraquette, Gloucester county, a station on the Caraquette railway, is situated at the upper or western end of Caraquette harbour, distant about 6 miles west of Caraquette settlement.

To provide a landing, boats and a place of shipment for oysters, a contract was entered into in 1890 for the construction of a wharf 350 ft. long, consisting of an approach 160 ft. long, 4 blocks each, 15 x 15 ft., 5 spans or openings of 20 ft. each, and an outer block or pier head 30 x 30 ft. The approach and several blocks were constructed open crib-work of round logs, the openings between each block being spanned by four 10 x 12 stringers, and the whole of the top of the work covered with 3-inch plank.

The wharf is now also much used for the shipment of flour from a mill situated a short distance from the work.

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In the fall of 1900, during a north-westerly blow, the tops of all the blocks and a portion of the approach were partly sheared off and the timber much broken by ice being jammed against the work.

During the present year the damaged top was removed and the work re-constructed with new material as follows:—A tier of longitudinals for length of 50 ft. and a full tier of cross-ties were placed in the approach, one set of cross-ties in first and third blocks; a set each of longitudinals and cross-ties in second and fourth blocks; and a set of longitudinals in the pier head; 10x12 corbels were placed over the four blocks and at the outer end of approach, and over the whole of the work 10x12 stringers, 3-in. covering and 8x10 caps were laid. The blocks and approach were filled with ballast to the under side of the covering and the pier head close-piled on three sides with 10-in. hardwood.

The expenditure for the fiscal year 1901-02 was \$1,899.33.

UPPER SALMON RIVER.

Upper Salmon river, Albert county, otherwise called Alma, the terminus of the Albert Southern railway, is situated in the county of Albert, 5 miles from Rocher Bay, and 2 miles from Herring Cove. From Alma, deals are either sent in coasting vessels to St. John for transshipment, or transported directly to sea-going vessels lying at the anchorage off Grindstone island, or in the roadstead off Herring Cove.

For protection of the coasters lying inside the river mouth at the private wharfs, which affords four or five berths, the department built in 1883-4 a breakwater 26 feet in mean width, and 180 feet long. In 1886-7 this breakwater was extended to a length of 420 feet. By position, the work lies across the path of the littoral drift. In consequence, the foreshore has advanced nearly 500 feet on the weather side, and the drift, having fully charged the outside of the breakwater, is now working around the end. Accordingly, inside the point of the breakwater a bar 11 feet in height was formed which extended nearly across the mouth of the river. By means of a temporary groyne, inducing scour, the channel, which had become contracted to a width of only 34 feet, was increased during the months of April and May, 1900, to 125 feet in breadth, but the shoal soon formed again.

During the year 1901-2 contract plans for extension of the breakwater were prepared and tenders for construction of the work were asked. The total expenditure to date amounts to \$11,216.30.

WILSON'S BEACH.

Wilson's beach, Charlotte county, is a fishing settlement in a slight indentation of the coast on the west side of Campobello.

A breakwater 373 feet in length was built, to shelter the cove, by the joint contributions of the federal and local governments between the years 1874 and 1878. The outer arm of the breakwater having become dilapidated, and the cove having silted up, preparations were made in 1899-1900 to restore the inner end, 248 feet in length, and the repairs were nearly completed in the following year, 1900-1. A quantity of materials was also procured for the reconstruction in deeper water of the dismantled outer end.

In 1901-02, the repairs to the inner end were completed. Crib number one, of the part to be reconstructed, 80 feet in mean length and 36 feet in width, consisting principally of hardwood timber, was built, placed in position and ballasted. Crib number two, made of similar materials, was also begun and at the end of June had been built to a height of 8 tiers. A quantity of timber was delivered during the year.

The expenditure for 1901-2 was \$8,243.86.

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PROVINCE OF QUEBEC.

AMHERST.

Amherst village is situated at the eastern end of Amherst island, one of the Magdalen islands in the gulf of St. Lawrence and in the county of Gaspé.

Amherst is a port of considerable importance and the first stop of the steamer plying between Pictou and the Magdalen islands.

A landing pier was in part built at Point Shea. An approach of 530 feet was built in May and June, 1900. During the months of July, August, September and October, 1901, a length of 180 feet of the pier proper was built and completed. In May and June, \$3,337.60 was spent to buy tools and materials, and \$895.77 was spent to build up to low water level a crib 80 x 24½ x 14. The pier for a length of 188 feet is 20½ feet wide on top with an outside batter of one in eight and a mean height of 13½ feet.

Expenditure during fiscal year, \$11,063.48.

ANSE À BEAUFILS.

Anse à Beaufils, in the municipality of Cape Cove, county of Gaspé, is situated on the gulf of St. Lawrence, 6 miles south of Percé.

In 1898 the work of improving the channel, leading to a small basin, was commenced and 437 feet of protection wall was built on the east side, to which was added 100 feet of close face cribwork ; 347 feet of round timber wall was built on the opposite side, to which was added 100 feet of work similar to that on the east side.

During the past fiscal year the outer close-faced work on west side, which was canted over, was brought to a level by spring freshets washing the sand from under the crib, and the eastern pier has settled and requires levelling up from 3 to 7 feet.

Some repairs were made during the year which cost \$198.87.

ANSE ST. JEAN.

Anse St. Jean is situated on the southwest shore of River Saguenay, 25 miles above its mouth.

During the fiscal year, the outside face of the wharf was sheathed with 6-inch tamarack, on a length of 110 feet ; 300 feet in length of the flooring was completed with 3-inch spruce, and two coats of paint were given to the building on the wharf.

Expenditure for fiscal year, \$1,010.15.

BAIE ST. PAUL.

The village of Baie St. Paul, in the county of Charlevoix, with a population of about 1,400, is situated on the north shore of the St. Lawrence, 60 miles east of Quebec. It is built on both sides of the River du Gouffre, which empties into a bay one mile and a quarter deep and three miles wide at its entrance. The bay is dry at low tides with the exception of some small channels. Spring tides rise 20 feet, neap tides 13 feet. The wharf at Cap-au-Corbeau, is about three miles distant from the village, on the eastern side of the bay, and the isolated block stands on the western side at about 3,000 feet from high water mark. During the last fiscal year, some repairs were made to the wharf, and to the isolated block, which was in very bad condition.

Repairs made to wharf:—The approach was extended shorewards, a length of 50 feet, by a width of 10 feet and height of 12 feet, built of crib-work filled with stone ; 900 cubic yards of sand were used to raise the road along the shore side of the approach,

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and 18 'toises' of stone were thrown at the foot of the seaward face of the approach and shore end of the wharf, to stop scouring by the waves; 12 elm fenders were put in and secured with iron straps; a middle pathway, 1,000 feet long and 12 feet wide, was laid with 3 inch spruce deals.

Repairs to isolated block:—The sheathing on the west side was renewed on a surface of 4,000 square feet; on the east side, 300 feet of face timber, broken by ice, were replaced.

Complaint having been made of the existence of boulders in the vicinity of the wharf, orders were given to remove same, but owing to unfavourable weather such had to be postponed until the spring. During the month of May, a big boulder 5 feet high was blasted and scattered, others of smaller sizes were also broken.

Expenditure during the fiscal year, \$1,510.41.

BEAUPORT.

The village of Beauport, in the county of Quebec, is situated at the mouth of the river of the same name, on the north shore of the River St. Lawrence, two miles below the city of Quebec. Spring tides rise 21 feet, neap tides 13 feet. At low water spring tides, the water of the St. Lawrence recedes about 3,700 feet from the mouth of the Beauport river.

The work done during the fiscal year consists in the building of 320 feet of crib retaining wall, from north end of Caron wharf northwards, the height of which is 14½ feet at south and 13½ feet at north end, the width being 12 feet for 240 feet; the outer end of 80 feet, which has three inclined slips leading to the top of embankment, in different directions, is practically 25 feet wide. Excavation of 12 feet wide from top of embankment, averaging 10 feet high, was made the whole length of the 320 feet of crib to two feet below bottom surface of channel, so that in the subsequent dredging of channel, the foundation timbers would not be displaced by any removal of solid ground under them; 1,422 cubic yards were thus excavated. 2,425 feet of 12 x 12 white pine; 500 feet 12 x 12 hemlock; 5,240 feet of square and round cedar; 765 feet of 10 x 10 spruce were placed in work; 325 feet 6 x 12 white pine capping used; 6,380 feet B. M. spruce deals for ballast flooring mostly and 17,000 B. M. white pine deals used for the outside sheathing of face and slips. The labour was much increased by handling the material dredged for foundations of crib twice, first by removing it to build, then handling it back to fill in.

A good deal of hand dredging in bed of river had been done the previous season, on a length of 420 feet by 20 to 25 feet giving about 2½ feet more water at high tides to that length north of Caron's wharf; further dredging over same ground last fall, has increased this depth to nearly 5 feet or to the level depth at north end of old wharf. The west bank is cut in line of new crib up to railway bridge, where the accumulation of sand, loose stones, gravel, &c., was removed; some old embankment timbers found to stand about 5 feet high and in good condition, were not removed.

Expenditure during fiscal year, \$2,982.18.

BERTHIER (*en bas*).

The village of Berthier, in the county of Montmagny, is situated on the south shore of the St. Lawrence, 25 miles east of Quebec.

Spring tides rise 19 feet, neap tides 13 feet.

The wharf is in very good condition, and affords every facility to navigation. The outside end, which is now 60 feet wide, stands in 14 feet of water at low tide. There are two landing slips and a shed.

During the year the work done consists in the completion of an extension 100 feet long, 30 feet wide and 40 feet high, which was commenced in 1900. A height of 11 feet has been built, floored and fully ballasted. In order to assimilate the junction of the extension with the old work, part of the superstructure of the latter was taken down, then rebuilt as a whole with the new work. A surface of very nearly 6,000 square feet

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has been sheathed with oak and elm 6 inches thick. 21,600 feet B.M. spruce deals were used in renewing and repairing the flooring. A shed 40 by 26 feet was erected on the head of the wharf; it is divided into two parts, one for passengers and the other for freight, it is well painted and covered with sheet iron. Six snubbing posts were replaced and general repairs done to the whole structure.

The expenditure during the fiscal year amounts to \$4,552.79.

CACOUNA.

The village of Cacouna is situated on the south shore of the St. Lawrence, 6 miles east of Rivière du Loup. The place is very much resorted to by tourists in summer; its beach is one of the prettiest on the St. Lawrence. Spring tides rise 19 feet, neap tides $9\frac{1}{2}$ feet.

The work done to the wharf during the past fiscal year consists in the construction of an addition of the following dimensions: length on the north-east and south-west sides, 69 and 86 feet respectively, width 24.5 feet at the top of the crib with a batter of 1 in 12, mean height 17 feet. Instead of building this extension in a straight line or at right angles with the former work it was built obliquely to the outside end of the wharf, so as to reach the deepest water within the shortest distance.

The bottom is level and shallow, the depth of water at high tide, at end of addition, is practically the same as before.

The work was built of close-face cribwork with 12 by 12 inch spruce timber, with upright posts and side longitudinals and thoroughly filled with stone ballast.

The depth of water at high tide is $12\frac{1}{2}$ to 13 feet.

Expenditure for fiscal year \$2,500.82.

CAP DE LA MADELEINE.

Cap de la Madeleine is situated in the county of Champlain on the River St. Lawrence, 3 miles from Three Rivers.

In 1887 a wharf was built, and in 1894 an extension of pile work 40 feet long, 24 feet wide and 19 feet 6 inches in height was constructed. The old work was raised to level of new and the whole put in good order.

The work is now 87 feet long in front, $22\frac{1}{2}$ feet wide with a landing 11 feet wide. The length is 250 by $23\frac{1}{2}$ feet wide and $14\frac{1}{2}$ feet high above low water, with 5 feet of water at its outer end.

During the past fiscal year the down stream end of pier was torn down to water level and the work rebuilt to a proper elevation.

A good part of the crib-work on the up stream side was replaced and a new sheathing 9 inches thick was bolted on the ice-breaker.

Almost all floor beams were replaced and a new flooring, 3-inch, was laid.

Eleven piles were driven around the north-east corner.

The wharf presents a fine appearance and is in good condition.

Expenditure during past fiscal year, \$592.04.

CAP SANTE.

The village at Cap Sante, the chief town of the county of Portneuf, is situated on the north shore of the St. Lawrence, 5 miles below Portneuf, and 31 miles above Quebec.

The works, commenced in spring of 1900 to rebuild and enlarge the old wharf bought in 1899, have been brought to a close this fall.

The slope commenced on west side in 1901 was continued inshore 72 feet in length on top, its height at junction of last year's work, being 14 feet and the inside timbers, running back from 20 to 41 feet; it is well and strongly built, with double facings of 12 x 12 hemlock in foundations and pine and cedar in remainder of crib.

The slope, very much exposed to the ice, is covered all over with 6-in. rock elm sheathing, and to ensure solid foundations, the beach was excavated on a width of 20 feet by 5

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feet deep and 72 feet long. The whole of the old wharf, a rotten tumble down structure was rebuilt, giving an area of 11,700 feet against about 1,500 before.

The whole frontage of wharfage on river is covered with 6-in. rock elm from top to bottom; the east end, return corners and side faces are protected with 3 and 4-in. spruce deals.

The freight shed, small and badly built, was reconstructed with additional length and made 22 by 36, instead of 22 by 24 feet; it is solidly framed with angle braces, spruce knees, screw bolted and placed in better location. All around edge of wharf fine flat stones, lying in layers of 8 to 12 inches thick on the beach and from 3 to 6 feet long and 28, 30 and 34 inches wide, were lifted up and placed immediately inside capping timbers, well imbedded in gravel, keeping it in place, preventing any washing away of it when sea breaks over the wharf.

The whole of the wharf is covered with heavy gravel instead of timber flooring.

Expenditure during fiscal year \$2,501.31.

CHICOUTIMI.

The town of Chicoutimi, in the county of the same name, is situated on the south shore of the Saguenay River, 71½ miles above Tadousac, and at the head of navigation. The Richelieu and Ontario Navigation Company's boats call two to six times a week at the Chicoutimi pier, during the season of navigation, with passengers, freight and mails.

The old buildings on the wharf were taken down and new ones erected; the new freight shed measures 60 feet by 30 feet, and the passengers' waiting room is 25 x 25 ft. These two buildings are covered with galvanized iron, and painted three coats inside and outside.

On the north side of the wharf 6 fenders 11 x 11 were placed, and 5 snubbing posts were renewed.

Expenditure during fiscal year \$1,513.34.

CUISSSES D'ALMA.

The Cuisses d'Alma in the little discharge of Lake St. John is 7 miles from St. Joseph d'Alma.

During the last six months of the fiscal year two rocks called the 'Cuisses d'Alma,' and which obstructed the 'Petite Décharge,' were blasted for a distance of 75 feet on a width of 39 feet, and a depth of 18 feet.

Expenditure during fiscal year \$575.82.

FATHER POINT.

Father Point, in the county of Rimouski, is on the south shore of the St. Lawrence, about 6 miles from the village of Rimouski.

On November 8, 1900, a contract was entered into for the construction of a wharf 800 feet long, by a width of 40 feet at the bottom, tapering to 32 feet at the top; a section of this work, 100 feet long, and 8 feet high, was built by day labour, during the fall 1900. At the close of the year, the work under contract was not yet commenced.

Expenditure during fiscal year \$625.77.

GRANDES BERGERONNES.

At Grandes Bergeronnes 21 miles below Tadousac, in the county of Chicoutimi and Saguenay, the sum \$100.00. was expended in removing boulders from the channel for a distance of 800 feet on a width of 150 feet.

GRANDE ENTRÉE.

Grande Entrée is situated on the western end of Coffin island.

The block of 40 x 50 feet built inside of the harbour during the last fiscal year had to be completed. The outside face and corners had to be reinforced both inside and

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outside, well braced and sheathed. An approach 128 feet long, 18 feet wide and 5 feet high was built to connect the block to the shore; it is protected every 5 feet by fenders. The whole has been floored with 3-inch spruce deals.

A freight shed 30 x 20 was erected on the east side of inside block.

The work was done by day labour during the months of July, August, September, October and November, at a cost of \$814.35.

GRANDE VALLÉE.

Grande Vallée, Gaspé County, is situated in the gulf of St. Lawrence 68 miles from Ste. Anne des Monts and 30 miles from Fox River.

In June, 1901, a contract was entered into for the construction of a wharf at the east point of the harbour.

During the fiscal year, 360 feet of crib-work, or about $\frac{1}{4}$ of the total, was constructed at a cost of \$14,857.56.

GRINDSTONE.

Grindstone is a village on the south side of Grindstone island, four miles east of Etang du Nord, settled principally by Scotch farmers and Acadian fishermen.

For years past most of the freight for the Magdalen islands has been unloaded here, and the construction of a landing pier was greatly needed.

An approach of 605 feet, 25 to 50 feet wide in places, and of an average height of nine and a half feet on the outside face, was built along the eastern side of Grindstone Cape.

The outside face of the approach, exposed to the heavy easterly gales from the Atlantic Ocean, is protected by a sheathing of split spruce logs, held in place by two sets of walings, fastened by cross-ties and a double set of posts. A mattress of brush was laid under the stone filling taken from the cape.

One hundred and fifteen feet of close-face cribwork was built out from the end of the approach in an easterly direction, forming the first part of the landing pier and breakwater.

This first part of the pier is 21½ feet on top, with an outside batter of one in eight.

The work was done by day labour during the months of July, August, September and October, with the exception of the first 500 feet of the approach done under contract. During the months of May and June, 1902, a sum of \$2,619.83 was spent in buying tools and materials; \$190 was paid for the completion of the roadway and \$1,020.30 spent in building a crib of 64 x 24 x 8, that is two feet above low water level.

Expenditure during fiscal year, \$9,036.87.

HOUSE HARBOUR.

House Harbour is an important port on the western end of Allright island.

The pier, built at the channel during the fiscal year 1900-01, had to be strengthened and partly floored.

Beams and 2-inch hemlock deals, bought last fiscal year, were utilized to cover 1,800 superficial feet of flooring, at a cost of \$162.05.

HULL.

Hull, the shire town of the county of Wright, is situated on the Ottawa river, opposite the city of Ottawa. It possesses unrivalled water power privileges and contains a number of saw mills, a pulp and paper manufacture, a match factory, &c., &c.

Two large iron bridges span the river at this point connecting it with the city of Ottawa. Population 13,988.

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The work of building a concrete and masonry wharf on the Ottawa River at the foot of St. Elizabeth St. was awarded by contract on October 30, 1900.

The wharf consists: 1st, of a landing block 130 feet wide and 70 feet deep, built up to three different levels in ten feet of water, and consisting of a cribwork substructure up to the water level, and a superstructure of concrete masonry walls with filling between them; 2nd, an approach from shore to the landing block 403 feet long built up also to three different levels, consisting of dry rubble masonry walls with filling between them. During the fiscal year 1900-01 the cribwork substructure of the landing block and a portion of the dry walls were built and some filling made, at a total cost of \$9,865.12.

During the fiscal year 1901-02 the work under contract was completed, and other works not provided for by contract were performed. These included: The cementing of the joints of the coping stones of the dry masonry walls for 1,200 lin. feet at a cost of \$788.45; the construction of an iron tube railing on both sides of the approach for a length of 718 feet at a cost of \$718; and the construction of a roadway on St. Elizabeth St. 600 feet long, 30 feet wide and protected on both sides by riprap walls built at a slope of 1 in 1, at a cost of \$2,615.62.

The total expenditure on this work for the fiscal year amounts to \$40,977.59.

ISLE AUX COUDRES.

L'Isle aux Coudres, in the county of Charlevoix, is an island of the St. Lawrence, situated opposite Les Eboulements, about 3 miles distant from the north shore. It is 65 miles east of Quebec. Population about 900.

Spring tides rise 18 feet, neap tides 10 feet.

During the fiscal year some minor repairs were made to the wharf.

About 20 toises of stone ballast were put in, some stringers replaced and the flooring repaired.

On November 19, 1901, a contract was entered into for the construction of an addition to the wharf 60 feet long, 30 feet wide on a mean height of 44 feet; at the close of the year the work was well under way. There were some dangerous rocks near the head of the wharf, which were blasted and removed.

The expenditure for both works up to June 30, 1902, is \$3,896.35.

ILE AUX GRUES.

Ile aux Grues is an island in the St. Lawrence, which lies opposite Cape St. Ignace about 4 miles off the south shore, 40 miles below Quebec. Population about 800. Area 7,800 acres. Spring tides rise 18 feet, neap tides 11.

On October 23, 1900, a contract was entered into for the construction of a wharf on the north side of the island.

The general description of the work is as follows: the wharf has a total length of 730 feet, and consists of a head block of open cribwork 80 feet long by 30 feet in width, 14 piers 20 feet long and 22 feet wide of similar cribwork placed 24 feet apart and connected by timber spans, with an approach 34 feet in length and 22 feet wide of stone and gravel.

Work was completed in September.

Expenditure for fiscal year, \$8,709.66.

ISLE VERTE.

The village of Isle-Verte is situated on the south shore of the St. Lawrence, about 16 miles east of Rivière du Loup and 130 miles east of Quebec; it contains flour, carding and saw mills, population, 4,600. Spring tides rise 19 feet, neaps 12.

The description of the pier is as follows: total length 1,283 feet, consisting of open-faced cribwork approaches, 1,233 feet long, 21 feet wide with an average height of 10 feet; a head block 93 feet wide by 50 feet long and 18 feet high.

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During the last fiscal year, the following repairs were done:—A surface of 7,800 sq. feet was paved with spruce deals 3 inches thick; a middle pathway, 4 planks wide, was laid on the new flooring on a length of 367 feet, new floor stringers were put in, 2 cross-ties replaced and 14 iron bars 4-in. x $\frac{3}{4}$ -in. were put on the steps of the staircase.

Expenditure during fiscal year \$798.39.

KAMOURASKA.

The village of Kamouraska in the county of the same name, is on the south shore of the St. Lawrence, 90 miles below Quebec. It is a favourite summer resort. Spring tides rise 18 feet.

During the fiscal year, the extension commenced in 1900, was completed by adding 250 feet of face timbers, one third of the last row of cross ties and longitudinals, and laying flooring over a surface of 750 sq. feet. A surface of 5,200 sq. feet was sheathed with spruce deals 3 inches thick and fenders $7\frac{1}{2}$ inches square placed at 12 feet intervals; a middle pathway, 4 planks wide has been laid over the flooring on a length of 260 feet.

The expenditure for the fiscal year \$1,450.83.

LES EBOULEMENTS.

The village of Les Eboulements, in the county of Charlevoix, is situated on the north shore of the St. Lawrence, 65 miles east of Quebec. Spring tides rise 20 feet, neap tides 13 feet. The repairs made to the wharf in the course of the present fiscal year are as follows:—

A middle pathway, 400 feet long, 4 planks wide was laid from the shore end for a length of 400 feet, two rows of face timbers, with stringers and flooring, renewed. The slip on the north-east side, which had been damaged by ice, was thoroughly repaired; 20 fenders were placed and minor repairs made to sheds.

Expenditure for fiscal year \$799.70.

MATANE.

The village of Matane, in the county of Rimouski, is situated on the south shore of the St. Lawrence, at the mouth of the River Matane, 240 miles below Quebec, and 30 miles, by way of Little Metis, from St. Octave, the nearest point on the Intercolonial Railway. It contains several saw and grist mills and a spool factory. Spring tides rise 14 feet, neap tides 7 feet.

At the session of 1901, a sum of \$4,000 was appropriated for an extension to the wharf and repairs to old works. Owing to extensive accumulation of sand near the outside end of the addition built during the fall 1900, it became impossible to construct any further extension without closing altogether the access to Price Bros. wharf.

The old wharf being in need of immediate repairs, it was thoroughly restored; two of the platforms connecting the piers having become dangerous were undone, and 10 new stringers 12 x 12 in. put in; the flooring, which was worn out, was entirely renewed, on a surface of 7,200 square feet, exclusive of the approach.

The pavement was made double, the first floor in cedar deals 3 inches thick, distanced 5 inches, and the top one, in spruce deals 3 inches thick laid crosswise with $\frac{3}{4}$ -in. joints.

The sheathing of the piers, having been damaged and broken by ice, was repaired and renewed with spruce timber 7 inches in thickness; cap timbers were replaced on the whole surface; 10 mooring posts, in cedar, 12 x 14-in. and 12 feet long were put in and the flooring of the approach, 2,000 sq. feet. was renewed. Lastly, 30 "toise" of stone ballast were distributed in the extension built last year.

The expenditure during the fiscal year was \$1,411.09.

MONTMAGNY.

Montmagny, in the county of same name, is a thriving town on the south shore of the St. Lawrence, on the Intercolonial Railway, 36 miles below Quebec. The Rivière

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du Sud flows across the town ; it contains a large saw-mill, a pulp mill and many other industries. Spring tides rise 20 feet, neap tides 13 feet.

In the course of the fiscal year, the flooring of the wharf, which was entirely worn out, was renewed with 3-in. spruce deals ; two fenders were replaced and a winch repaired. The pier is 205 feet long, the outer 55 feet are 30 feet wide, and the remaining 150 feet, 24 feet wide. There is a depth of water of 4 feet at low tides.

Expenditure for fiscal year, \$364.37.

MONTREAL HARBOUR.

Lower Division.

The actual work on the contract was commenced in June 1901 and interrupted on November 21, same year. At the date, there were 4 of the 20 proposed cribs, sunk and loaded ; two more were built and almost ready to sink in position. The excavation was completed for the western bulkhead and was progressing along the southwest side of the pier.

Earth refilling was begun behind the bulkhead and carried to the level of the original ground.

In 1902, the ice came down on the March 28, and on the April 5, the local ferry-boats commenced running.

Preparations were made in April, and on the 28th of that month, construction work was started on the bottom flooring of crib No. 7 ; at the end of fiscal year, cribs Nos. 7, 8, 9, 10 and 11 had been launched, being then at a height of $6\frac{1}{2}$ feet from bottom ; No. 5, built in 1901, was sunk, loaded and refilling commenced on the high level pier proper.

Dredging was carried on ahead of the cribs and space made ready for crib No. 6.

The building of concrete footing blocks was begun on 13th of June and 62 were completed at the end of the same month. These blocks are moulded at the quarry, $\frac{3}{4}$ mile from the wharf, and brought on a railroad track, built by the contractors, the track is also used to bring stone ballast for the cribs and crushed stone for the concrete walls.

Expenditure during fiscal year, \$201,722.69.

MURRAY BAY.

Murray Bay, or Malbaie, is one of the best known and most frequented summer resorts of the north shore of the St. Lawrence, in the county of Charlevoix, $83\frac{1}{2}$ miles below Quebec. The village is situate on both sides of the mouth of the River Malbaie, which empties into a bay one mile deep and about $2\frac{1}{2}$ miles wide at its entrance. At low tide the bay is dry, with the exception of small channels through which the river discharges. The steamers of the Richelieu and Ontario Navigation Company call here daily, and a heavy traffic is done. Spring tides rise 20 feet. Neap tides, 12 feet.

During the fiscal year, about half the surface of the wharf has been repaired. A length of 400 feet of the old structure was renewed on a mean height of $2\frac{1}{2}$ feet, and then raised 3 feet. A double railing was built, the sheathing on the west side was entirely renewed and that on the east side repaired, and five ladders were placed where required. Repairs were also made to the outside end, and iron straps put on the corners. During winter, 211 "toises" of stone ballast were put in. In the months of May and June, a shed 55 feet long and 26 feet wide was erected. These works were carried out by day labour. The present condition of the wharf is very good.

Expenditure for fiscal year, \$6,792.74.

NEW CARLISLE.

New Carlisle, on the north shore of the Baie des Chaleurs, is the chief town of the county of Bonaventure, distant 65 miles from Campbellton, N.B.

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During the fiscal year, the landing slip on the east side of the New Carlisle wharf, rendered useless by the raising of the flooring of the wharf at the upper end, the previous season, was placed in proper position.

In the course of this last spring the lower part of same slip was badly damaged in a heavy storm, and the balance of appropriation was used in effecting temporary repairs to keep it from further injury, until properly repaired. The work done on rebuilding the slip, consisted in going back 35 feet onto the flooring, cutting it down 10 feet wide on a slant, continuing the planking all the way down, partly on trestles, partly on crib-work down to lower end of slip. Sixty-three yards of stone ballast were also put in slip and several openings in flooring where ballast escaped, were refilled and blocked up; 82 feet of 6" hardwood sheathing were placed on east of wharf some 25 ft. out from slip, where two lengths of face timbers were broken through by the ice. To give access at outer end of wharf at low tide, when accumulated sand on sides prevents approach on either sides at low water, steps were cut out in end of wharf, 7 ft. wide by 6 ft. deep and 5 ft. high. Guard rails were placed at upper end of slip on both sides, where necessary for due safety.

Expenditure for fiscal year, \$698.80.

NEWPORT.

The village of Newport, in the county of Gaspé, is situated at the mouth of the river of the same name, on the north shore of the Baie des Chaleurs, 88 miles east of Campbellton, N.B., and 50 miles west of Caplan. Spring tides rise $4\frac{1}{2}$ feet. The population of the village is extensively engaged in fishing, which is carried on almost to the exclusion of all other pursuits.

In 1884 works to improve the harbour were constructed and completed in 1887.

The works consist of two parallel piers; the west pier 75 feet long and the east pier 230 feet long.

There is also a breakwater at Les Islets 160 feet long with an approach 30 feet long.

During the past fiscal year material was purchased, with which to extend the breakwater, at a cost of \$741.19.

NOTRE-DAME DU LAC.

The Village of Notre-Dame is situated on the west side of Lake Temiscouata, on the Temiscouata Railway, about midway between Rivière du Loup and Edmundston. It is the centre of an extensive lumber trade; two steamboats and numerous sailboats are plying at all time over the lake which is nearly 30 miles long with a width varying from $1\frac{1}{2}$ to 5 miles.

In order to provide landings on both sides of the lake, two small piers of open-face cribwork were commenced during the month of October 1900; one on the west shore, opposite the church, and the other on the east shore a little up the lake.

In the course of the fiscal year, these piers have been raised 5 feet at the outer ends and brought level to the shore ground; they were filled with stone ballast and with spruce deals. Steps were provided for landing at low water; they also were sheathed all around.

The description of the piers is as follows: approach 78 feet long, 14 feet wide; head block 29 x 25 feet, by 16 feet high.

Expenditure during the last fiscal year, \$1,185.72.

PERCÉ.

Percé is the shire-town of Gaspé, situated on the Gulf of St. Lawrence, 36 miles from Gaspé Basin. It consists of two small coves called North and South Beach.

In 1888-89 a breakwater, used as a landing pier, was constructed in the south cove.

During the past fiscal year repairs were made to the above landing pier by doubling over the old flooring with 3 inches spruce deals the full width of 20 feet by a length of 320 feet, and a landing ladder was placed at a cost for all repairs of \$598.76.

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PETITES BERGERONNES.

At Petites Bergeronnes, 18 miles below Tadousac, in the county of Chicoutimi, the sum of \$230.50 was expended in removing boulders from the channel of the river, for a distance of 2,100 feet on a width of 300 feet.

RIMOUSKI.

Rimouski is situated on the south shore of the St. Lawrence, 180 miles below Quebec ; it is an important station of the Intercolonial railway, and the point where the transfer of the Royal mails takes place. Spring tides rise 15 feet, neap tides 9.

During the months of September and October, the sum of \$759.39 was expended to complete the construction of a shed 110 feet by 26 feet dimensions erected upon the outer end of the wharf. A light tower, 8 feet high by $4\frac{1}{2}$ feet square was built on top of this shed.

The attention of the department having been called to the fact that some parts of the wharf were not safe to carry the weight of trains passing over it, in November and December last, a length of 525 feet, from the outer end, was strengthened and levelled. The eastern side was raised 16 inches, new stringers were put where necessary and stone ballast added up to the height of the flooring. In May last the head of the wharf and the shed thereon having been seriously damaged, were repaired ; a surface of 2,350 square feet of flooring was renewed with spruce deals 5 inches thick, and the shed thoroughly overhauled. 9 snubbing posts 10 x 10 and 30 feet in length were placed to accommodate the mail tender.

Expenditure during the fiscal year, \$2,505.32.

RIVIÈRE AU RENARD.

Rivière au Renard is one of the most ancient settlements in the county of Gaspé. It is the first important fishing station and business place met with, proceeding from Gaspé basin, along the south shore up the St. Lawrence. The population is estimated at 1,700.

A small landing pier was constructed in 1895-6.

The pier intended to make a harbour of refuge, was started in June, 1901, and built out to 300 feet from its junction with cliff during first half of last fiscal year.

The work is close faced all through, starting with a width of 24 feet inshore, widens out to 31 feet 4 inches at end of 300 feet ; at low neap tides there is some $2\frac{1}{2}$ feet of water, and in low spring tides, low water is 75 feet farther out.

The structure is 12 feet high at its junction with shore and 16 feet at outer end. The rise of water spring tides, (a very low tide on September 18 and 19) was 8 feet 3 inches.

The pier stands on a reef of solid rock extending out to nearly 100 feet more.

The work done so far is superior to any contract work now done on this coast. The amount of expenditure for work and materials was \$6,514.24.

RIVIÈRE AUX VASES.

Rivière aux Vases, forming part of the parish of Isle-Verte in the county of Temiscouata, this river lies about midway between Cacouna and Isle Verte.

The chief trade consists in the marine grass, called 'herbes à barnaches,' people gather this grass in boats and come inside the river to unload.

It is to provide a better landing that the construction of a pier was decided on ; this landing pier is now 127 feet long, 30 feet wide and 7 feet high at its face. It is constructed along the east bank of the river, and the depth of water at high tide is 6 feet.

During the past fiscal year, some work was done to complete the construction of last year and a further addition 32 feet long of similar work was built.

Expenditure during fiscal year \$499.18.

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RIVIÈRE BLANCHE.

The village of Rivière Blanche, or St. Ulric de Matane, situated on the south shore of the St. Lawrence, is about 9 miles west of Matane. Spring tides rise 14 feet, neap tides 7 feet.

During the fiscal year ended June 30, 1902, the following repairs have been made to the wharf: The flooring was renewed on a surface of 6,400 square feet, with 3 inch thick spruce deals; 1,000 linear feet cedar, 11 by 12 inches, have been used to renew the floor stringers, and 640 feet of same timber for renewal of top course.

A timber span 35 feet long, having become dangerous, was made anew; on the T head, a length of 150 feet cap timber was replaced and secured with 12 iron straps, 8 feet long, 4 by $\frac{1}{2}$ inches, to prevent it from being carried away by ice shove.

Expenditure for fiscal year \$792.86.

RIVIÈRE CAP DE CHATTE.

Cap de Chatte is situated on the St. Lawrence, at the extreme western end of the county of Gaspé. In 1898-9, a training pier was constructed along the upper side of the channel, followed by the River Cap de Chatte, across the foreshore of the Gulf of St. Lawrence.

The length of the pier is 468 feet.

During the past fiscal year the training pier on the west shore having settled down irregularly in winter of 1900, was levelled up to its normal height of 3 feet above high spring tides, at an expenditure of \$887.72

On the east side fronting the channel, the depression ran from outer end from 26 to 10 inches back 192 feet, and on west side from 22 to 1 inch; the flooring was removed, to replace ballast washed out, some 23 feet of planking carried away was replaced, the inshore end left unfinished on 100 feet long, was completed and planked, with 3 inch spruce deals, on a length of 65 feet.

RIVIÈRE DU LOUP (EN BAS).

Rivière du Loup, in the county of Temiscouata, is on the south shore of the St. Lawrence, 115 miles below Quebec. It is an important place, and the point where the wharf was built, is a favourite summer resort.

During the fiscal year, the sum of \$55.50 has been spent to put the movable slip in place, which had been carried away during a storm.

RIVIÈRE NOIRE.

The village of Rivière Noire, in the county of Charlevoix, forms part of the parish of St. Siméon and is distant $\frac{1}{4}$ of a mile from the place where the isolated block has been built. Spring tides rise 19 feet, neap tides 12 feet.

In the course of the past fiscal year, improvements were made to the harbour; the main work consisted in the construction of a standing bed 110 feet long by 30 feet wide, for vessels, built of two rows of timber laid crosswise, fastened together with iron bolts and kept to the bottom with stone and gravel. An opening 30 x 25 feet, which existed in the old wharf, and which was giving much trouble to navigators, was closed; a number of boulders and rocks were blasted and used in the work of closing the gap.

The expenditure for the fiscal year is \$999.97.

HYDROGRAPHIC SURVEY.

St. Lawrence—Ship Channel.

During 1901 observations were taken from the three stations of the main triangulation completing the 1901 section, between Three Rivers and Batiscan.

Main triangulation points were selected, from Batiscan to Lotbinière, on both shores of the river and a few cast iron pipes were sunk in the ground at spots definitely chosen.

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The survey of the north shore between Three Rivers and the Sorel islands was completed.

Plans were prepared of the work done between Port St. Francis and Three Rivers.

First plan shows the main triangulation points, soundings and topography of the shores.

The other two are from Three Rivers to above Champlain, thence to Batiscan and show the main triangulation points and sounding only, the topography of the shores not yet having been taken.

On May 1, 1902, six parties were sent out. Gauges were re-established at Sorel, Stone Island, Port St. Francis, Three Rivers, Cap Magdeleine, Champlain, Batiscan, St. Jean des Chaillons (Briquades and King's Wharf), Cap Charles, Leclercville, Lotbinière and Pointe Platon.

Where possible the board gauges were replaced by box-gauges which proved more satisfactory.

Main triangulation points were readjusted and definitely chosen between Batiscan and Lotbinière, and main triangulation points were selected, and flagged between Lotbinière and Pointe Platon.

The placing of cast iron pipes progressed fairly well.

The house boat, from which to take soundings, has proved very satisfactory.

In conclusion, the charts now being prepared for publication are approaching completion and it is expected they will be a credit to the department.

ST. ALEXIS.

St. Alexis is on the south side of Ha-Ha Baie, River Saguenay, about 63 miles from its mouth.

Four cribs 25 ft. by 25 ft., filled with stones were constructed to the south of the work commenced in 1898, these piers are distant 25 ft., and united by spans.

Height of piers, 28, 32 and 35 ft.

Expenditure during fiscal year, \$4,000.01.

ST. ANDRÉ.

The village of St. André in the county of Kamouraska, is situated on the south shore of the St. Lawrence, about 15 miles west of Rivière du Loup; it is a station of the Intercolonial railway. Population about 2,500. Spring tides rise 18 feet, neap 10. A wharf built by Mr. Alfred Desjardins was bought by the Department of Public Works; it consists of an earthen embankment 850 feet long, on a mean height of 6 feet, of 9 piers connected by platforms of 30 feet span; the head pier, which is 25 x 25 feet and 15 feet high, which is being built, was commenced in 1900, at the close of the year it was not yet completed.

During the fiscal year, the sum of \$300 has been expended in doing repairs to the approach in the following way: length of 65 feet was surrounded with a timber frame composed of cross-ties and longitudinals, supporting on both sides a planking, inclined 1 in 4, of spruce deals 3-in. thick, and sunk 1½ foot in the clay. It seems the only way to prevent the embankment from being washed away by waves. Some temporary repairs were also made to the remaining part of the approach.

STE. ANNE DU SAGUENAY.

The parish of Ste. Anne du Saguenay is situated on the north shore of the Saguenay river, 72½ miles above Tadousac, and opposite the town of Chicoutimi. Its population is over 2,000. Besides the church and post office, the parish contains 7 stores, four cheese factories, a lime kiln, a brick-yard and a pottery. The only market for the sale of the produce of the farms of this section of the northshore of the river is Chicoutimi.

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A crib 40 feet long, 30 feet wide and 27 feet high, was constructed at the eastern extremity of the wharf, it is fully sheathed with 5-in. tamarack.

The flooring of the wharf was renewed on a space 200 feet long and 27 feet wide.
Expenditure during fiscal year, \$3,102.07.

ST. FULGENCE.

St. Fulgence (otherwise called l'Anse aux Foins) is a small village in Chicoutimi county, on the north shore of the Saguenay river, 10 miles from Chicoutimi. It contains one Roman Catholic church, four stores and two saw-mills. Population of parish, 1,000.

During the fiscal year, 25 toises of stone were put in crib commenced in 1897; the south and north faces of this pier were sheathed with 5-in. tamarack.

Expenditure during fiscal year, \$502.23.

ST. IRÉNÉE.

The village of St. Irénée is situated in the county of Charlevoix, on the north shore of the St. Lawrence, 78 miles east of Quebec, and 6 miles west of Murray Bay; it contains several sawmills, two grist-mills and a cheese factory.

Spring tides rise 19 feet, neap tides 12 feet.

Much trouble is experienced with the pier, on account of its tendency to lean over on the east side which is due to the scouring of the sand.

During the past year, that part of the wharf which is dry at low tide was thoroughly repaired; the shore end on a length of 100 feet, was lifted and, after having excavated to hard bottom, 7 rows of timber were put in, a ballast floor was also constructed and 12 toises of stone ballast put in. A length of 200 feet on a mean height of 10 feet was sheathed with 5-in. birch. Every plank was set down to hard bottom as much as possible. To allow the R. & O. Navigation Co. steamboats to draw near the wharf, without danger at low tide, boulders were blasted and removed; over 5 toises of rock were thus removed and used as ballast in wharf.

Expenditure during the fiscal year is \$1,198.93.

ST. JÉRÔME.

St. Jérôme, county of Chicoutimi, is a village situated on the south bank of Lake St. John, 24 miles east of Roberval.

The wharf, commenced in 1899, consists of an approach 75 feet in length, 25 in width and 15 in height, filled with stone ballast, sand, &c.; two outer blocks 75 feet in length by 20 feet in width, with 22-foot spans between, which are connected by stringers and planking. The whole length of 275 feet was planked, 6 snubbing posts were placed, &c., at a cost of \$4,999.28.

Two cribs, 74 feet by 25 feet, were built at the northern extremity of the wharf in 1901-2. These two cribs were filled with stone and sheathed with 5-inch tamarack, and 3-inch tamarack was laid on a length of 150 feet.

Expenditure during fiscal year, \$1,999.97.

ST. LAURENT, ILE D'ORLEANS.

The village of St. Laurent, in the county of Montmorency, is situated on the south side of the island of Orleans, 10 miles east of Quebec.

Spring tides rise 19 feet, neap tides 13 feet.

In the course of the fiscal year general repairs have been done to the wharf; a surface of 570 square feet was sheathed with elm; 38 fenders were placed and 17 lengthened by 8 feet; 4 ladders, oak and iron, were placed where needed, and two face timbers, broken by ice, were renewed; oak steps were placed along the slip, and two coatings of paint were given to the shed.

During the month of June, 1902, a contract was entered into for the construction of an addition to the wharf 70 feet in length and 60 feet in width.

Expenditure during the year, \$860.34.

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ST. MICHEL.

St. Michel is a pretty village below Quebec, situated on the south shore of the St. Lawrence, about 12 miles east of Lévis.

Spring tides rise 19 feet, neap tides 13 feet.

For the last two years extensive repairs have been made to the wharf, and in the course of this fiscal year the superstructure, on a length of 405 feet, was entirely renewed. A further length of 100 feet was also reconstructed, but only on half its width. The new work has a mean height of 6 feet. Half the ballast floor was renewed and 900 cubic yards of stone added in. On the north-east side, on a length of 505 feet, the sheathing was renewed on a height of 12 feet with spruce deals 3 inches thick; 82 fenders, 22 feet long, 22 x 8 inches, were also placed on that side. Eight mooring posts, 16 inches square, and two snubbing posts, 25 feet long, 13 x 12 inches, were placed where required. The flooring and the cap timbers were renewed on the whole surface of the section repaired. The work was done by day labour.

A survey of the channel dredged by the dredge *Nithsdale* was made during the month of April to ascertain the depth of water at low tide.

Expenditure during the fiscal year, \$5,791.23.

ST. NICHOLAS.

The village of St. Nicholas is situated on the south shore of the St. Lawrence, 14 miles above Quebec; it is one of the best farming places in that vicinity. Spring tides rise 18 feet. To accommodate the shipping trade of the village and of the neighbouring places, a landing pier was built by this department; its length is 380 feet with an approach 150 feet, the width at the shore and outside ends are 25 and 48 feet respectively.

During the spring of 1901, the outside end, on a length of 60 feet, was carried away by an ice shove. In the course of the fiscal year, the damaged timbers and the ballast were piled on the shore to be used in the work of reconstruction, a certain quantity of timber was also purchased. Later on, it was decided to do the work by contract; plans and specifications were then prepared and a contract entered into. At the close of the present year, the work was not yet commenced on account of the water being too high.

The amount expended in the course of the fiscal year is \$1,785.73.

ST ROCH DES AULNAIES.

The village of St. Roch des Aulnaies, in the county of L'Islet, lies on the south shore of the St. Lawrence, 66 miles below Quebec. Spring tides rise 20 feet, neap tides 13 feet.

The contract for the construction of a wharf, entered into during the month of June, 1899, was completed in September, 1901. The amount of contract was \$6,087, but owing to some changes in the dimensions and kind of work in the approach, an extra work was ordered at a cost of \$1,192, making in all, \$7,279. During the month of August of the present year, the sum of \$208.06 had been expended to remove boulders near the head of the wharf, and to place a ladder.

The severe storms that occurred in the course of the fall of 1901, proved that the wharf and approach, as built according to contract, are not high enough, and that it would be expedient to increase the height of the whole work, and to cement the large stones laid on top of the approach, to prevent them from being moved out of position by waves. This work was done during the months of April, May and June; the cribwork part was raised $2\frac{1}{2}$ feet, and on top of the stone approach, was laid two facings, about 3 feet in thickness by $2\frac{1}{2}$ feet in height, of ashlar and block-in-course masonry backed with rubbles; over the rubble filling, a layer of concrete 5 inches in thickness was spread. The work was done by day labour and the expenditure during the fiscal year amounted to \$4,430.65.

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ST. SIMÉON.

St. Siméon is situated in the county of Charlevoix, on the north shore of the St. Lawrence, 15 miles below Murray Bay. Spring tides rise 19 feet, neap tides 12 feet.

An isolated block, 50 x 40 feet and 10 feet high, was built some years ago; its outside end stands in 13 feet of water at low tide. It was badly damaged by ice during the past winters, the north-east part has been lifted and thrown into the slip; most of the face timber was broken. A height of 15 feet, on half the surface, was taken down, the broken timber renewed and the work rebuilt, additional ballast was also put in. Temporary fenders were placed to protect the work until further repairs be done. Expenditure during the fiscal year, \$799.53.

TADOUSAC (ANSE À L'EAU).

Tadousac, the *chef-lieu* of Saguenay county, is a watering place on the north-eastern side of the Saguenay river, about 5 miles above its mouth, and is much frequented by tourists and health seekers during the summer season. The village contains three churches, one of which is the oldest church built in Canada, being erected in 1747, four hotels and stores, a telegraph office, a post office and many handsome villas; a fish hatchery has also been established here by the Department of Marine and Fisheries. Population of village about 900, of parish, 2,440.

The face of the wharf, for a length of 180 feet, was sheathed with 6-inch birch; twenty fenders 11 inches by 11 inches and 25 feet long, as well as five new snubbing posts were placed.

The flooring of the pier constructed to 1890, and the flooring of the approach, on a length of 175 feet, were renewed with 3-inch pine.

Expenditure during fiscal year, \$1,370.91.

TROIS PISTOLES.

Trois Pistoles, in the county of Temiscouata, is a village on the Intercolonial railway, 25 miles below Rivière du Loup; it is a flourishing centre to which converges an extensive traffic. Spring tides rise 18 feet, neap tides 10 feet.

In the course of the fiscal year ended June 30 1902, the following repairs were effected to the wharf: At the outside face, a surface of 1,000 square feet has been sheathed with spruce planks 4 inches thick; this work was made as a protection against the action of ice, on the face timbers which were already much damaged. Minor repairs were also done to cap timbers, side courses and flooring; 150 loads of gravel were used to improve the approach, and a coating of paint given to cap timbers and handrails.

Navigators complaining of not having any place as shelter during the fall, a small waiting room 10 by 14 was built over the outside end of the wharf. The balance of money was used to remove boulders from close proximity to the wharf.

Expenditure for fiscal year, \$500.50.

PROVINCE OF ONTARIO.

BAYFIELD.

The village of Bayfield, county of Huron, is situated at the mouth of the river of the same name, which empties into Lake Huron, 12 miles south of the town of Goderich. It contains one grist and saw mill.

On November 27 last a contract was let for the construction of an extension of the south pier, 120 feet in length, 30 feet wide, and to dredge a berth for the cribs to 16 feet below low water.

Up to June 30, no active operations had commenced, but the contractor had nearly all his timber on the ground ready to frame.

Expenditure for fiscal year, \$153.64.

BRONTE.

Bronte is situated in the county of Halton, on the north shore of Lake Ontario, 27 miles south-east of Toronto.

At the last session of Parliament the sum of \$7,000 was appropriated for improvements and repairs.

Work was commenced on July 1, and 1 crib, 50 ft. x 24 ft., 2 cribs, 41 ft. x 16 ft. (total length, 132 ft.) were placed on the outer end of east pier, and 536 ft. in length of superstructure was built and a channel 900 ft. long and 30 ft. wide, with a depth of water of 12 feet, was excavated.

The dredging for berths of cribs was performed by plant belonging to the department.

Expenditure for fiscal year, \$7,002.90.

BRUCE MINES.

Bruce Mines is situated in the Algoma district, on the north shore of Lake Huron, 45 miles south-east of Sault Ste. Marie. Population, 1,500.

On June 19, 1901, authority was given to construct a warehouse on the new landing pier for the accommodation of freight, and an agreement was entered into for the erection of a building 30 feet by 40 feet, walls 12 feet high, with windows, doors, brick chimney, &c., for the sum of \$500. The work was completed on October 30.

On April 10 last authority was given to dredge a basin in front of the new government wharf in order to enable vessels to turn. Work was commenced on April 24 and up to June 30 the plant worked 668 hours, removing 51,080 cubic yards of material, costing \$4,390.

Expenditure for fiscal year 1901-02 was \$718, besides dredging.

BURLINGTON CHANNEL.

Burlington Channel, in the county of Wentworth, is simply a cut through a piece of low land which partly separates Lake Ontario from a large sheet of water called Burlington bay, enabling vessels to reach the wharf at the city of Hamilton. Both sides of the canal are lined with piers.

At the last session of parliament the sum of \$45,000 was appropriated for repairs to the piers. On October 10 a contract was let for the reconstruction of the superstructure of the west end of the south pier and to protect the channel side of both piers with sheet piling.

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A large quantity of material has been delivered, and active operations were commenced in the early part of June, but the contractor has not a sufficient nor efficient plant to do the work by the time specified in his contract.

The swing bridge staff were employed during the season of navigation and their wages amounted to \$2,595.22 and the maintenance and repairs cost \$2,031.03. The latter amount includes the purchase of a new sprocket wheel and chain, and rebuilding bridge house, which was burned down in December, 1901.

The traffic over the swing bridge and through the channel has greatly increased during the last few years. During the month of last August it was as follows:—

Foot passengers, 43,338; vehicles, 3,088; bicycles, 1,447; automobiles, 30; sailing yachts, 976; large steamers, 337; steam yachts, 102; electric cars, 3,808, carrying 121,248 passengers.

Expenditure for fiscal year, including dredging, \$5,961.04.

CALLNDAR.

Callendar is situated on Eastern bay, Lake Nipissing, in the district of Algoma, some 8 miles south of North Bay.

At the last session of parliament the sum of \$2,000 was appropriated to repair the wharf. Work was commenced on September 1 and completed on June 24. The work consisted in renewing the rotten caps, stringers, flooring, &c., over the whole length of the wharf, 540 feet in length, 28 to 46 feet wide, which is built of pile bents, with an outer crib 46 feet long and 10 feet wide.

Expenditure for the fiscal year, \$1,985.72.

COBOURG.

Cobourg is an incorporated town of Ontario in Northumberland county, situated on the north shore of Lake Ontario, on the Grand Trunk Railway, 92 miles west by south of Kingston, 69 miles north-east of Toronto, and is a port of entry. It has several mills, foundries, breweries and a car factory. Population, 4,239.

At the last session of parliament the sum of \$5,000 was appropriated for repairs and dredging. Authority was given on June 19 to expend \$2,000 on repairs to piers, and was afterwards increased by \$3,000, making a total of \$5,000.

Work was commenced in June, operations ceasing on November 11 for the winter months and resumed in May, being completed in June last. Considerable repairs were done to the outer end of the east pier, new stringers and planking being placed where required. The coal wharf, 350 feet in length, at the shore end of the east pier, was reconstructed from low water up, also the north side of the inner harbour 775 feet in length.

Expenditure for the fiscal year, \$3,007.55.

COLLINGWOOD.

Collingwood, is situated on the south side of the Georgian bay, township of Nottawasaga, county of Simcoe, 94 miles by railway from Toronto. It is the terminus of the Northern and Hamilton and North-western railways. There is an extensive trade in ship-building, grain and lumber, and it is the starting point of steamers for Owen Sound, Sault Ste. Marie, Parry Sound, &c. Population, 9,000.

As constituted now the harbour is very large and commodious, being protected on the north and east sides by extensive breakwaters. Several small wharfs, belonging to the town or to companies, are built inside the area inclosed by these breakwaters.

On May 26, 1900, a contract was let to deepen the channel 110 feet wide to 22 feet below zero of gauge, thus giving 20 feet at low water level from the range light inwards. The work was proceeded with at once, and completed in February, 1901, the contractor having removed 47,799 cubic yards of material.

On May 28, 1901, another contract was let for continuing the deepening and dredging the outer half of the 110 foot channel, extending from the range light to the bay, to

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a depth of 22 foot below the zero of the gauge, to give 20 feet at low water from the lake to the elevator and wharfs in the inner harbour. Work was commenced early in May, and completed on October 29 last, the contractor having removed 41,793 cubic yards of material.

Mr. Boone's plant removed 6,326 cubic yards rock from the entrance to the dry dock, also excavated a cut from the harbour channel to Messrs. Charlton's Mills, on the west side of the harbour, to enable vessels to load at the mill wharfs. Up to the end of June last, 22,117 cubic yards of material had been removed.

Further dredging is proposed, which will give a channel from the bay through the harbour, 200 feet wide at the outer end, with 20 feet depth at low water.

Expenditure for fiscal year 1901-2, \$41,872.82.

COLPOY'S BAY.

Colpoy's Village, county of Bruce, is situated on the west side of Colpoy's Bay, about 3 miles north of Wiarton.

At the last session of Parliament the sum of \$1,400 was appropriated to extend the landing pier.

Work was commenced on September 11, and completed on December 6, and consists of an extension of 50 feet at the outer end, 30 feet wide ; 30 feet of which is fully ballasted crib-work, and 20 feet a space between the crib and the former outer end, giving 12 feet of water at the outer end of the structure,

Expenditure for fiscal year, \$1,399.07.

DEPOT HARBOUR.

Depot Harbour is situated on the north-east coast of the Georgian Bay, 60 miles north of Collingwood and 263 miles west of Ottawa. The wharfage and other facilities in this harbour were built by the Canada Atlantic Railway, who have made it the western terminus of their line. It is a splendid natural harbour, three eighths of a mile in width, deep enough to accommodate the largest vessels employed on the lakes, and perfectly safe in all winds and weathers. In connection with this harbour, a huge elevator, capacious docks and warehouses, and other buildings, have been erected, and a new centre of commerce and population has been created. The elevator has a total storage capacity of 1,250,000 bushels. The requisite power for the operation of this elevator, and for the electric lighting of the terminus is generated in a power house located in the western end of the elevator. The warehouses, two in number, are each 700 feet long by 90 feet in width, with double tracks in the rear, and the docks form an aggregate length of 3,000 feet built in 22 feet of water.

In connection with the harbour the Canada Atlantic Transit Company operates between Chicago, Milwaukee, Duluth and Depot Harbour a number of very large steel steamers of 4,000 to 7,500 tons burden each. The vessels make return trips every week, and each vessel has a capacity of 130,000 to 275,000 bushels of corn—about 175 to 275 car loads.

During the past season about 19 million bushels of grain have been carried to this harbour, there being generally two or three million bushels in transit. Large quantities of flour, pork, starch, &c., for British and continental ports are also transported every season ; also extensive package freight from New England for the west, and considerable Manitoba package freight.

In 1900, the Canada Atlantic Railway Company applied for aid, to the amount of \$200,000, towards the construction of docks and other harbour improvements required to meet the increasing traffic in this harbour.

During the last session of parliament a sum of \$65,000 was granted to be applied towards the construction of an additional length to the elevator wharf. The proposed extension to be 1,250 feet long, built outwards from the end of the present elevator wharf towards Supply Island.

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On May 14 last, a contract for this extension of 1,250 feet was let, comprising the following works :

1st. *Substructure*.—The underwater portion of the wharf extension to be built in 6 cribs : No. 1, 250 feet long by 60 feet wide, and cribs Nos. 2, 3, 4, 5 and 6, 200 feet long each and 60 feet wide, and of sufficient height, that when sunk in place, the top shall extend one foot above low water.

2nd. *Superstructure*.—That portion of the wharf extension to be built out of water on top of the cribs to be continuous cribwork, carried up from the level of the top of cribs to a height of 6 feet, after the cribs have been set to the proper alignment and sunk to the required level.

The cribs are to be built solid to a level 18 feet below low water and cribwork walls on both sides built upon them to the height of 1 foot above low water. The superstructure will be the continuation of these walls built to a height of 7 feet above low water level.

An artificial foundation intended to carry the structure for a distance of 500 feet, along its length, had to be provided for, before works of construction could be commenced, as it was discovered that the bottom upon which that portion of the structure would rest was of too soft a nature to carry its weight. This foundation consists of stone rip-rap deposited in the bottom and levelled evenly to a horizontal bed to receive the structure.

An Order in Council was passed authorizing an additional expenditure for the construction of this foundation. The work was added to the main contract as a supplement, the quantity of rock required to do the work was estimated at 15,000 cubic yards and the price of \$2.50 per yard was allowed and accepted by the contractors.

Original contract price was.....	\$157,500 00
Extra for artificial foundation equivalent to.....	37,500 00
Total.....	<u>\$195,000 00</u>

No works of construction had been commenced on this contract, at the end of the fiscal year 1901-2.

GODERICH.

Goderich, in the county of Huron, is situated on the east shore of Lake Huron, at the mouth of the Maitland river, about 68 miles from Sarnia and 60 from London. It is the terminus of the Buffalo branch of the Grand Trunk Railway, and is a place of considerable importance, partly on account of large deposits of salt found in its vicinity. Population, 4,153.

1. The breakwater, the reconstruction of which was completed in Decembes 1900, is in good repair, although there are some slight settlements noticeable here and there to the extent of a few inches, but these settlements are downward and not outward, as though the cribs had settled in their proper positions more solidly on the rock bottom.

2. The north pier, which had repairs completed during July 1901, has stood the spring freshets and storms satisfactorily, and as a whole presents a fairly good appearance, although in a few scattered places the outside shell of some of the face timbers is breaking away.

The outward appearance is comparatively satisfactory, still the timbers are in a very much decayed condition, in some instances it being difficult to find sufficient sound old timber to spike the new timber to ; and these remarks will hold good in reference to the south pier as well. Some slight repairs will be made to both the north and south piers as well as to the check-water, especially where the south pier and check-water were damaged on May 9, by a vessel running into them, the expense of which will be defrayed from the grant for repairs for the present fiscal year.

However, these repairs will only be temporary, as the timbers of both piers are so badly decayed their superstructure should be completely renewed within two or three years, or breaches will be washed through into the newly dredged channel.

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3. The renewal of the superstructure of the lumber dock was completed between July, 1901, and April, 1902. The old timber and gravel filling was removed and new white pine timber with stone filling substituted.

This dock was built twelve feet wide, six high and eighteen hundred and three long.

The appearance and construction of this dock are satisfactory from every point of view.

4. The Grand Trunk Railway dock is very much out of repair, the face of it being almost completely gone, in some places with holes scattered all along the ground surface. This dock is a menace and danger to both life and navigation, as at any time the filling is liable to fall into the cutting now being excavated by the dredge.

5. The Elevator & Transit Co's. dock is in good condition, repairs having been made at the west end to fill a hole and prevent coal from falling into harbour.

6. The commercial dock was in very bad condition but authority being given on May 10, 1902, to reconstruct the superstructure and to utilize \$2,634 left over from the grant for renewing the lumber dock, until the appropriation for 1902-3 became available, timber was ordered at once and preparations made to commence work.

The work progresses favourably, although slowly, on account of this dock being so much in use, difficulties are constantly occurring to retard the progress.

7. Rock blasting was completed in the fall of 1901, permitting the dredge to deepen the inner harbour to $18\frac{1}{2}$ feet over the area contemplated.

8. A further appropriation of \$11,200 was requested to remove an angular area of mud opposite the elevator ; to clean up in front of commercial dock ; to remove drifted sand from the channel at entrance to piers, and to remove islands and deepen basin at the east end of harbour.

The mud opposite elevator has not been removed but the loose rock in front of Commercial dock has, and the channel at entrance cleaned out, as well as a large portion of islands and basin at east end.

The dredge was occupied 257 hours, 25 minutes, at a cost of \$9,972.83 to remove 16,800 cubic yards of drifted sand from entrance to piers in order to make the channel in the same condition as it had been in the fall when work closed down for the season.

This expenditure with little variation will be required from year to year to keep the channel clear unless some protection be constructed to obviate it.

Construction and repairs.....	\$12,982 34
Dredging.....	9,972 83

Expenditure for fiscal yeas 1901-2 was..... \$22,955 17

HARWOOD.

Harwood is situated on Rice lake, county of Northumberland, 30 miles to the north of Peterborough.

At the last session of Parliament the sum of \$500 was voted to construct a wharf and plans were prepared. It was found, that to complete the work the cost would be \$1,000, and instructions were given to expend the \$500 already voted in obtaining material until a further grant was made, this was done, and at the end of June, materials to the value of \$499.71 were purchased.

HAWKESTONE.

Hawkestone is situated on Lake Simcoe, county of Simcoe, 14 miles east of Barrie, on the northern division of the Grand Trunk railway.

On July 12 authority was given to expend the sum of \$140 to repair the wharf. Work was at once commenced and completed on August 6. It consisted in planking the superstructure of the inner cribs.

Further repairs were ordered to be made on May 19, and were completed in June. They consisted in strengthening the outer end of the pier with sheet piling.

Expenditure for fiscal year, \$163.35.

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KINCARDINE.

Kincardine, in the county of Huron, is situated at the mouth of the Penetangore river, which empties into Lake Huron, 31 miles south of Southampton; it is the terminus of the Wellington, Grey and Bruce division of the Grand Trunk Railway. Extensive salt deposits are found here.

At the last session of Parliament the sum of \$6,500 was appropriated for harbour improvements, and authority to expend that money was given on July 11, 1901, to effect such repairs as were necessary to the piers. Work was commenced on July 16, and is still in progress. The repairs consist in renewing the breastwork on the southern end of the inner harbour, a length of 90 feet, and rebuilding the superstructure of the shore end of the north pier from low water up, a length of 375 feet.

Expenditure for fiscal year, including dredging, \$8,666.11.

KINGSVILLE.

Kingsville, county of Essex South, on the north shore of Lake Erie, about 25 miles east of the mouth of the Detroit River, Essex and Lake Erie Railway. Population 1,537.

At the last session of Parliament, the sum of \$20,000 was appropriated to complete repairs to the landing pier and breakwater, and to extend the latter 400 feet over the bar into deep water.

Active operations were commenced July 1, and are still in progress. The repairs to the landing pier and breakwater are completed, and four cribs 100 feet long, 30 feet wide, and 14 feet high were placed in position ready for the superstructure.

Expenditure for fiscal year, \$18,601.73.

LEAMINGTON.

Leamington, is situated in the county of Essex, on the north shore of Lake Erie, 37 miles from Windsor. Population about 2,000.

On February 5, 1900, a contract was let for the sum of \$27,949, for the construction of a wharf 1,031 feet in length, the work to consist of pile bents 8 feet 6 inches between centres for a distance of 811 feet, from the shore outwards, then two cribs each 105 feet long, and an 'L' crib 40 feet by 90 feet long, running southeast,

Active operations were commenced May 4, and the work was all completed on November 9.

It was found necessary to place a talus of stone around the outer end of the structure to prevent undermining, and 800 cubic yards of large stone was used for this purpose.

Expenditure for fiscal year, \$21,487.68.

MEAFORD.

Meaford is an incorporated town in the county of Grey, on the west side of the Georgian bay, 18 miles west of Collingwood, and 20 miles to the eastward of Owen Sound. It is the terminus of the northern division of the Grand Trunk Railway. Population, 2,500.

On June 15, 1900, a contract was let for the construction of 930 feet of close piling on the southeast side of the harbour, extending from the east abutment of the road bridge in a north-easterly direction to the east pier; the extension of the east breakwater 300 feet in length, and dredging to 20 feet at low water, an area in the harbour to accommodate large sized vessels, and for the removal of 100 feet from the outer end of the western pier, in order to widen the entrance. The amount of the contract was \$62,570.

On July 19 last, authority was given to substitute iron piles and wooden breastwork in lieu of the close pile protection work called for in the contract, and an extra allowance for same amounting to \$4,914 was granted to the contractor.

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Owing to inadequate plant and want of material to carry on the work, considerable delay has occurred, and at the close of the fiscal year the breastwork and dredging were not completed.

Expenditure for fiscal year 1901-2 was \$40,996.48, including \$34,669.54 for dredging.

MIDLAND.

Midland, Simcoe county, is the terminus of the Midland division of the Grand Trunk railway, on Georgian bay.

Population, about 3,500.

Large quantities of lumber are shipped to and from this harbour, and the railway company has two large grain elevators at this place. During the past two years the Canada Iron and Furnace Company has erected large smelting works.

At the last session of Parliament the sum of \$10,000 was appropriated for dredging. Work was commenced on September 2, and up to June 30, the plant worked 1,283½ hours, and removed 47,588 cubic yards material, much of it consisting of hard pan and boulders.

Expenditure for fiscal year, \$14,204.69.

NORTH BAY.

North Bay, a town in the county of Nipissing and district of Algoma, is situated at the upper or west end of Lake Nipissing. It is the terminus of the Grand Trunk railway, at this point connecting with the Canadian Pacific railway, 227 miles north of Toronto. The town is of considerable importance and is growing very fast. Population about 2,000.

At the last session of Parliament the sum of \$500 was appropriated to pay for labour and materials to complete repairs to the wharf. This work was commenced, and completed on July 31, at a cost of \$1,128.87.

On July 9 authority was given to construct a warehouse on piles adjoining the outer block of the wharf. A building 40 feet long, 20 feet wide, with 12 foot posts, rolling doors, shingle roof, small office, windows and doors, was erected, and completed by November 1.

OAKVILLE.

Oakville is situated on the north shore of Lake Ontario, in the county of Halton, 22 miles west of Toronto. Population, about 1,700. It contains several mills and factories and a shipyard. The trade of the place is local. It is a station of the Hamilton branch of the Grand Trunk railway.

At the last session of parliament the sum of \$6,000 was appropriated to continue the repairs to the east and west piers.

Three hundred and twenty-four feet of the east pier, twenty feet wide, has had the whole of the superstructure renewed from low water up, two cribs 50 feet long each and 16 feet wide, were built on the west pier, and continuous superstructure placed on same.

The dredging of berths for cribs occupied the dredge for 96 hours.

Expenditure for fiscal year, \$6,005.70.

OSHAWA.

Oshawa is situated on the north shore of Lake Ontario, in the county of Ontario, 34 miles east of Toronto. Its manufactories include engines, boilers, printing and mill machinery, agricultural implements, furniture, leather, and bolts and screws. Population, about 4,500.

At the last session of parliament the sum of \$10,000 was appropriated for repairs to the landing pier.

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Active operations were commenced on August 15. and ceased for the winter months on December 10, resuming in April, and completed in June. The whole of the pier for a length of 800 feet has been entirely rebuilt from low water level.

A storehouse, 18 x 20 feet, has been built at the outer end of the pier, and an elevator to hoist the coal upon the pier into the coal warehouses has been erected.

Expenditure for fiscal year, \$10,124.83, including \$100 for dredging.

OWEN SOUND.

Owen Sound, in the county of Grey, is situated at the mouth of the Sydenham river, which flows into the head of Owen Sound, an arm of Georgian bay. The town is the centre of an extensive agricultural district, and is the terminus of the Grand Trunk railway branch of the Georgian Bay and Lake Erie division; also of the Canadian Pacific railway, Toronto, Grey and Bruce division. There are several lines of steamers running to and from Owen Sound. Population, 9,500.

On July 31, 1900, a contract was let for close piling on the west side of the entrance to the harbour, a length of 1,895 feet, for the bulk sum of \$28,425. Active operations were commenced in May last, and the whole of the work completed on December 29. The length of the work was reduced 20 feet, which, at \$15 per lineal foot, brought the contract down to \$28,125.

On May 6, 1901, authority was given to dredge a channel from the bay to the wharfs of the Owen Sound and Portland Cement Company's works. Active operations were commenced on May 13, and the work completed on August 27. The plant worked 928½ hours and removed 65,444 cubic yards.

Expenditure for fiscal year, protection work.....	\$20,947 53
Dredging.....	7,548 48
Total.....	<u>\$28,496 01</u>

PELEE ISLAND.

Pelee Island is situated at the western end of Lake Erie, in lat. 41° 46' N, log. 28° 45' W, about 30 miles south-east from the mouth of the Detroit river, and 16 miles south of the town of Kingsville, Essex county. Population of the island, about 600. The products of the island are grapes, wine, fruit and farm produce.

On October 26, 1900, a contract was let for the construction of a landing pier, on the west side of the island, 420 feet in length, consisting of eight cribs, 30 x 20 ft., and seven 30 x 16 ft., built of round logs, and continuous superstructure of squared timber. Active operations were commenced in June, and the work completed in October last.

Expenditure for fiscal year to June 30, 1902, \$7,779.41.

PENETANGUISHENE.

Penetanguishene, in the county of Simcoe, is situated on the north of the eastern peninsula in Georgian bay, formed between Nottawasaga bay and the waters of the Severn river, 40 miles north-west of the town of Barrie. It is the terminus of one of the branches of the Grand Trunk railway, and a large quantity of lumber is shipped thence from the north and east shores of the Georgian bay.

At the last session of Parliament the sum of \$10,000 was appropriated for dredging. Work was commenced on September 11, and continued up to November 26, when the plant was laid up for the winter. Work was resumed on April 17 last, and up to June 30 the plant had worked 1,080 hours and removed 59,700 cubic yards of material at a cost of \$9,039.35.

PICKERING.

Pickering Harbour, formerly known as Frenchman's Bay, is situated on Lake Ontario, 21 miles east of Toronto.

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At the last session of Parliament the sum of \$2,000 was appropriated to complete the repairs to piers.

Active operations were commenced on September 9, and continued until October 31, when work ceased for the winter, recommencing again in May, and completed by June 30. The east pier for a length of 500 feet has been rebuilt up from low water and filled with stone ballast.

Expenditure for fiscal year :—

Construction and repairs.....	\$ 2,000 00
Dredging.....	648 52
Total.....	\$ 2,648 52

POINT EDWARD.

Point Edward, Sarnia, is situated in the county of Lambton, near the head of the St. Clair river, 61 miles west of London.

Population, 8,000.

On November 25, orders were given to dredge a channel 770 feet long, 25 feet wide, to a depth of 19 feet in front of the old elevator pier. Work was commenced on December 10 and completed on the 24th of the same month. The dredge worked 150 hours and removed 25,282 cubic yards of material.

Expenditure for fiscal year, \$1,657.20.

PORT ARTHUR.

Port Arthur, Algoma district, is situated on Thunder bay, at the northern end of Lake Superior. It is an important station on the Canadian Pacific railway.

On October 14, 1901, the Duluth Dredge and Dock Co.'s dredge, No. 6, commenced work in the harbour and dredged a channel 150 feet in width, and to a depth of 21 feet below zero of gauge, along the north side of the Canadian Northern Elevator wharf, starting 100 feet beyond the end of the wharf, and terminating at west end of elevator.

A channel was also dredged on the north side of No. 5 dock, 130 feet in width, and 21 feet in depth below zero.

The dredge closed down work for the season of 1901, on November 15, having removed, up to that date, 55,864 cubic yards, scow measurement.

Work was resumed in the spring by the Duluth Company on April 25, three cuts were made, 30 feet each in width and to a depth of 21 feet below zero, at the west end of the Canadian northern elevator; also the small triangular piece was dredged to 21 feet at end of No. 5 dock.

The Duluth Company's contract terminated on May 14, having removed this spring 19,903 cubic yards, or a total during 1901-2 of 74,903 cubic yards, scow measurement.

On May 29, orders were given for five days dredging to be done at the Canadian. northern elevator, accordingly Messrs. Bowman & Co.'s dredge was brought from Fort William and put to work, south of Canadian northern elevator wharf. The amount of material removed was 6,140 cubic yards, scow measurement.

At the Kaministiquia river, Messrs. Bowman & Co.'s dredge, No. 6, performed the following service.

At Canadian northern dock, station 103 of Mr. Lamb's survey, a cut was dredged alongside of wharf, 30 feet in width and 800 feet in length, to a depth of 20 feet.

Opposite station 78, at shoal found there, a cut was made 350 feet in length to a depth of 20 feet.

A channel was also dredged through shoal formed opposite station 47, 90 feet in width and about 300 feet in length, to a depth of 20 feet.

Opposite station 40, at old Canadian Pacific coal dock, one cut was made through shoal 30 feet in width for a distance of 500 feet, with a depth of 20 feet.

Two cuts were dredged, starting opposite west end of Canadian Pacific railway elevator, 30 feet each in width for a distance of 1,100 feet to a depth of 18 feet below zero of gauge.

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Total amount of material dredged up to June 30, 1902, by Messrs. Bowman & Co., 56,961 cubic yards scow measurement.

Expenditure during fiscal year 1901-2, was \$20,371.57.

PORT COLBORNE.

Port Colborne, Welland county, is situated on the south shore of Lake Erie at the outlet of the Welland canal, is 56 miles from Brantford and 20 from St. Catharines.

Population in 1901 was 1,253.

A contract for the construction of a breakwater, was awarded on March 14, 1901, for a lump sum of \$395,000.

This breakwater when completed will extend from a point of land known as Sugar Loaf Point, in an easterly direction for a distance of 5,700 feet, and will protect the entrance of the Welland canal and the commercial docks, under construction by the Department of Railways and Canals, at the mouth of the canal, from prevailing south-westerly winds.

The breakwater consists of:—

1. A head block, all crib work, 100 feet in length, 60 feet in width, built up to a height of 13 feet above the ordinary low water level of Lake Erie (13.87 feet above the mitre sill of the new lock at Port Colborne). The average depth of water in which this block is built is 21 feet.

2. Of 4,800 feet of crib-work, 25 feet in width, built to an elevation of 7 feet above ordinary low water level, with a 'break' along the southern face, 12 feet in width, stepping down to the 7 feet level.

The depth of water in which this work is to be built varies from 21 to 6 feet, averaging full 15 feet.

3. Of a stone embankment at the shore end, 800 feet in length, 25 feet in width at the top, with slopes of 1 to 1½, built of stones, laid dry by hand, with a head of rock dumped in.

The first crib, adjoining the head block, was placed in position on August 19, 1901, and on June 30, 1902, the outer 900 feet of the structure, including the head block, were completed; the adjoining 900 feet were built up to 6 feet above ordinary low water level, and four cribs (400 feet) west of this, were sunk in line and filled with ballast.

During construction the work was exposed to very severe storms and suffered more or less damage. On April 27 last, the completed portion was so considerably distorted that the necessity of strengthening the structure was made apparent, and it was decided to double the width of the outer 2,400 feet of the breakwater, west of the head block.

On June 23, 1902, a supplementary contract was entered into for the performance of this work. At the close of the fiscal year the contractors had not done any work under the supplementary contract.

The whole of the work performed during the fiscal year has been well and substantially done, in the face of great difficulties, due to frequent stormy weather.

Expenditure for fiscal year to June 30, 1902, is \$183,162.60.

PORT ELGIN.

Port Elgin, is in the electoral division of the southern portion of the county of Bruce, on the eastern shore of Lake Huron, about 24 miles north of Kincardine, and 4 miles south of Southampton. It is a station of the Wellington, Grey and Bruce division of the Grand Trunk railway. There is no track from the railway to the harbour. Population 2,000.

At the last session of Parliament the sum of \$3,500 was appropriated for dredging. The work consisted in deepening and widening the entrance channel. Work was commenced on July 10, and completed on August 31. The dredge worked 389 hours, and removed 23,339 cubic yards of material.

Expenditure for fiscal year, \$3,290.

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PORT HOPE.

Port Hope is situated in the county of Durham, on the north shore of Lake Ontario, 63 miles east of Toronto, on the Grand Trunk railway, and has a population of 4,188. Chief trade is in lumber and grain.

At the last session of Parliament, the sum of \$3,700 was appropriated for repairs to piers. Work was commenced on July 1, and the appropriation all expended by October 30. The outer end of the west pier was repaired with new stringers, flooring, &c., for a length of 225 feet, and 200 feet in length of the east pier, between the warehouse and lighthouse, was entirely rebuilt from low water level up.

Expenditure for fiscal year :

Construction and repairs.....	\$ 3,733 95
Dredging	911 65

Total.....	\$ 4,645 60
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ROBBIN'S LANDING.

Robbin's Landing, is situated on Rice Lake, Alnwick township, county of Northumberland, 9 miles from the village of Harwood on the west, 9 miles from the village of Hastings on the east, and 32 miles from Peterborough to the north.

At the last session of Parliament the sum of \$1,000 was appropriated for constructing a wharf or landing pier.

Active operations were commenced on July 3, and the structure completed by October 10. The wharf consists of an embankment approach, protected by stone rip-rap 97 feet in length, 20 feet wide on top, and at the outer end a fully ballasted crib 40 feet by 20 feet with superstructure of square timber.

Expenditure for fiscal year, \$885.56.

RONDEAU.

Rondeau is situated in the county of Kent, at Pointe aux Pins, on the north shore of Lake Erie, about 140 miles west of Port Colborne, the Lake Erie entrance to the Welland canal. It is a harbour of refuge, and a very important one on this side of the lake. Of late years the beach at Rondeau has become a much frequented summer resort, and many cottages have been erected. The Erie and Huron railway have constructed their line this far and have established a dock for lake ferry to deliver coal in cars from the other side.

At the last session of Parliament the sum of \$10,000 was appropriated to continue the repairs to the piers.

Active operations were commenced on July 1, and 756 feet of the east pier has been rebuilt, 7 feet 6 inches high, from low water level, 52 feet wide at the outer end for a length of 51 feet, 29 feet wide, 290 feet long, thence 25 feet wide. The range light was moved 85 feet north until the superstructure was rebuilt, when it was placed back in its original position and securely fastened to heavy timbers on foundations.

Expenditure for fiscal year to June 30, 1902 :—

Construction and repairs.....	\$ 10,036 93
Dredging.....	4,811 16

Total.....	\$ 14,848 09
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SAUGEEN RIVER.

Saugeen river, empties into Lake Huron, 143 miles above Sarnia, it passes through the village of Southampton, situated on the shore of this lake, in the north riding of Bruce.

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At the last session of Parliament the sum of \$1,600 was appropriated to complete repairs to the breakwater. Work was commenced on July 1, and completed on August 17, and consisted in completing the repairs to the outer end of the breakwater, the whole of which structure is now in complete repair.

Dredging in the channel was ordered on June 19. Seven thousand eight hundred and eight cubic yards of hard material were removed, the dredge working 341 hours.

Expenditure for fiscal year:—

Repairs to breakwater	\$ 1,316 96
Dredging	3,020 78
Total	\$ 4,337 74

SOUTH NATION RIVER.

Improvements at the Pitch-off.

South Nation river takes its rise in the township of Matilda, in the county of Dundas, and after a very irregular course of 100 miles, enters the Ottawa river 5 miles below Plantagenet. There are several large tributaries, which render it almost insufficient, especially during freshets, on account of its small flowing capacity, to carry all these waters without overflowing the banks and flooding large areas of land. Apart from this there exist obstructions in the bed of the river, which impede the flow of the stream, and their removal would give a freer course to the discharge, and the flooding of the lands would be averted to a certain extent.

The most serious of these obstructions is called the 'Pitch-off,' situated about 1½ miles above Plantagenet, and 6½ miles above the outlet of the river. It consists of a ridge of solid rock which crosses the river, almost from bank to bank, with an average width of 300 feet, and an elevation of about 4 feet above low water level. The bed of the river at this point is 400 feet wide.

Some years ago on the east side of the river, a cut, 100 feet wide and 1 foot deep at low water, was made through this obstruction by the local government to drain the river above and to check the summer floods which caused considerable damage to crops over an area of about 10,000 acres.

During the fiscal year 1900-01 this cut was widened to 225 feet, and excavated to a depth of 1½ feet below low water, by removing 6,500 cubic yards of rock at a cost of \$5,017.16.

During the fiscal year 1901-02 the existing cuts were cleaned down to grade, widened to 325 feet, and excavated to grade, by removing a total of 5,200 cubic yards of rock at a cost of \$4,438.09.

The work in both cases was carried out by day labour.

SYDENHAM RIVER.

Sydenham river has its outlet in Chenal Ecarte, the passage between St. Anne Island and the mainland. From its mouth to Wallaceburg it is a large navigable stream, above this point it divides into two branches, north to Wilkesport 14 miles, and east past Dresden 15 miles, and on these two branches small steam craft with scows are run and booms of timber are rafted.

On June 19, 1900, authority was given to expend the sum of \$5,000 in removing obstructions. Work was commenced in June, and the north branch from Wallaceburg to Dresden cleared by October 5 last, removing some 1,100 trees, snags and stumps.

Eighty saw-logs taken out of the river were sold by auction for \$40, and the proceeds deposited in the Bank of Montreal, Toronto, to the credit of the Receiver General of Canada on November 8 last.

In May last operations were commenced on the east branch and completed by the end of June, removing some 950 trees, snags and stumps, and the wreck of the barge *Gondola* from the bed of the river opposite the town of Dresden.

Expenditure for fiscal year, \$2,266.05.

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THAMES RIVER.

Thames river empties into Lake St. Clair, and is navigable as far as the town of Chatham.

At the last session of parliament, the sum of \$8,000 was voted for dredging at the mouth of the river, and removing bars and obstructions between the mouth and the town of Chatham.

On May 2 last an agreement was entered into for the carrying out of this work. Work was commenced on May 17, and up to November 21 the plant removed 79,514 cubic yards of material, and worked $151\frac{1}{2}$ hours removing obstructions.

The channel at the mouth of the river was widened to 100 feet, the original estimate being for 50 feet, consequently the quantities were increased.

Expenditure for fiscal year, \$7,780.11.

TORONTO.

Toronto harbour is situated on the north shore of Lake Ontario, and is formed by a circular bay one and one-half miles in diameter, separated from the lake by a low island (formerly a peninsula) about six miles long, making a safe and well-sheltered harbour for containing a large number of vessels.

On February 10, 1900, a contract was let for the sum of \$61,171, to extend the west pier at the eastern gap out into the lake a distance of 800 feet; up to date 600 feet of this work is completed, and only the superstructure on the remaining 200 feet to be done. Dredging has been done in the channel to give a sufficient width of deep water through same, and stone talus has been placed consisting of 1,000 cubic yards of large stone, around the outer end of the extension to prevent undermining.

Good results followed the placing of the talus around the outer crib sunk in position last fall, as up to June this substructure has not settled nor been thrown out of line, as had been the case with the other cribs of this structure which were exposed to the winter storms. It is expected that the superstructure on the 200 feet at the lake end will be finished early in July next, when the contract will be completed.

Repairs have been made to the eastern pier and breakwater, and the top of same at eastern end has been planked 6 feet wide for a distance of 2,000 feet.

Expenditure for fiscal year—

Construction, &c.....	\$ 31,980 67
Dredging.....	6,710 25
Total	\$ 38,690 92

THESSALON.

Thessalon is situated on the north side of the north channel (Lake Huron), in the district of Algoma, fifty miles east of Sault Ste. Marie. Considerable lumber is shipped from this place.

On September 6 last authority was given to dredge at the mouth of the River Thessalon, in order to allow vessels to enter same to load, work was commenced, but after working about two days it was found to be impossible to keep a cut clear of the sawdust deposit, and it was abandoned.

Expenditure for fiscal year, \$1,044.25.

WABIGOON.

Wabigoon is situated on the main line of the Canadian Pacific railway, 95 miles east of Rat Portage, and 203 miles west of Port Arthur. Population about 400, chiefly engaged in mining operations.

At the last session of parliament the sum of \$3,300 was appropriated to construct a wharf. Active operations commenced on July 10, and were discontinued for the winter on October 31, and completed in June last. The work consists of building a

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new wharf 168 feet in length along the lake front, 15 feet in width, composed of fully ballasted cribs and continuous superstructure ; also raising the flooring of the old wharf, in order to give a width of 30 feet, and constructing a roadway approach of brush, stone and gravel.

Expenditure for fiscal year, \$3,261.95.

WIARTON.

Wiarton is situated in the north riding of the county of Bruce, at the head of Colpoy's bay, about thirty-two miles north of Owen Sound. It is the terminus of the Georgian bay and Lake Erie branch of the Grand Trunk railway.

On March 7, 1901, a contract was let for the construction of a landing pier, 350 feet in length, inside the breakwater, the amount of the contract being \$13,320. Work was commenced in May, and completed on September 5.

Expenditure during fiscal year \$13,756.20, including \$240 for dredging.

PROVINCE OF MANITOBA.

BIG POINT.

A survey, plan and estimate of cost of the proposed harbour at Big Point, which is situated 12 miles north of the mouth of White Mud river, was made.

There is a fair harbour at this point that is safe against all winds, excepting south and south-easterly winds.

FAIRFORD RIVER CANAL.

The work of excavating Fairford river canal was carried on during the fiscal year ending June 30 last. The work is composed of a through cut or canal through mostly hard, stiff clay, intermixed with some gravel and boulders towards the bottom of the excavation, with a ridge of limestone rock at the lower end.

The work of the Fairford river canal was completed by the contractors last fall and the water allowed to flow into the excavation and has been flowing ever since.

The work was visited twice this season, and at one time the flow of the water was gauged within the prism ; the quantity of water flowing through it at the time aggregated 290,048 cubic feet per minute.

The banks of the canal have stood fairly well, though a great deal of scouring has taken place at some points.

The water has been exceedingly high in Lake Manitoba this year, in fact, its elevation is between 2 and 3 feet higher this season than the old settlers claim has been the case in 40 years.

Notwithstanding the fact that the canal discharges the quantity of water above mentioned, it is believed that in the absence of the canal, higher water would have been experienced, as not only the elevation of Lake Manitoba water is above the ordinary, but it is the case with the other lakes such as Lake Winnipeg, Winnipegosis, &c.

Lake Winnipegosis has particularly been high, a great deal of its surrounding country has been inundated and damage was done to adjacent properties, the lumbering interests, &c.

As to the canal it is believed that its efficiency shall be felt to a greater extent when the head of the Fairford river below the canal has been cleaned out of boulders, snags, &c.

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GIMLI.

Gimli is the most important Icelandic settlement on the west shore of Lake Winnipeg, and is 62 miles north of the city of Winnipeg.

As reported before, the top timbers, stone, &c., of the Gimli pier crib-work was carried away by the fierce onslaughts of the wind, wave and ice, so that the amount authorized to be expended during the fiscal year 1901-2 was not sufficient to complete the work, so much damage having been done.

However, the trestle that had also been damaged was repaired, and 100 feet of the crib-work completed. Notwithstanding the fact that the original crib-work was in a dilapidated condition, we succeeded in completing 100 feet of the crib-work.

The side walls were built up of 12 x 12 timbers well bolted with inch iron drift-bolts and some 3-inch tamarack sheet piling driven around the outside walls to prevent any possibility of the ice or waves pulling apart or breaking the timbers.

A large quantity of stone was put into the crib-work.

The work was done during the winter months and completed before the breaking up of the ice in spring.

The work stood very well, and no damage whatever was done to the portion completed as described above.

The amount of \$1,472.26 was expended during the fiscal year.

GYPSUMVILLE AND REEF OFF SANDY POINT.

A survey, plan and estimate of cost of the Gypsumville harbour were made.

The mining company built piers out to enable them to load their products.

Some of the piers were carried away, only piles of stone were left in the bottom which were a menace to navigation.

This harbour is situated about 13 miles north of Fairford river at the north-east corner of a big bay of Lake Manitoba.

LAKE DAUPHIN.

No work was done in connection with lowering or cleaning out the bed of the Mossy River and straightening the channel; water has been so high about these rivers and lakes this last year that the doing of the work would have been, to say the least, both tedious and expensive.

HNAUSA WHARF—LAKE WINNIPEG,

Hnausa is an Icelandic settlement situated on the west shore of Lake Winnipeg, about 52 miles north of West Selkirk, and 70 miles north of Winnipeg.

The timbers at the water level of the outward face were broken by the onslaught of wind, waves and ice during the spring of 1901, so that the bonds uniting the top to the bottom timbers were broken, and the top timbers were apparently broken free from the lower ones.

The top work to the water level was taken down and rebuilt from there up with 10 x 10 wall timbers well drift-bolted with 1 x 3 x 3 ft. bolts, and to prevent any possibility of further damage to timbers at the water level, some 3-in. tamarac sheet piling was driven at the outer face and ends of the wing. The whole was well spiked on to the wall timbers and 2½-in. by 4-in. strap iron well spiked on to the sheet piling. The strap iron was used instead of ordinary timber waling pieces to avoid any chance of the ice breaking any of them. The work was completed before the ice shove this spring, and has proved a success and is in first-rate condition at present.

The amount of \$1,923.67 was expended in doing the work which was done by day labour.

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ST. ANDREW'S RAPIDS LOCK AND DAM WORK.

As to St. Andrew's rapids lock and dam very little progress was made by the contractors. The work had to be suspended periodically, in fact frequently, on account of rain, frost, snow, high water, &c., and perhaps somewhat on account of the unwillingness of the contractors to actively prosecute the work.

Expenditure during fiscal year, \$9,584.56.

SANDY BAY.

A survey and plan, estimate of cost and report relating to Sandy Bay harbour were made.

No work has been done other than that mentioned above, but I may add that a harbour of refuge at this point would answer a very good purpose, particularly during stormy weather, which has been quite prevalent during the last year, in fact, little or no calm water has been felt within that period.

SHOAL LAKE.

In connection with Shoal lake, the water this season has been a great deal higher than usual, and in consequence a number of the ranchers round about the lake have suffered more or less on account of it.

WINNIPEGOSIS.

There has been no work done to improve the channel at the mouth of the Mossy river, lake Winnipegosis, but those interested in navigation have not suffered this season since the water of the lake has been over two feet higher than ordinary, in fact, the high water has done a good deal of damage to property owners along the lake, so much so, that the people are agitating the question of having a canal dug at Meadow Portage to regulate the flow of the lake, and maintain the level of its elevation to an ordinary stage.

BRITISH COLUMBIA.

ANDERSON AND KENNEDY LAKES.

A very material improvement has been made to the outlets of both these lakes, the object of which is to give increased facilities to the mining claims being worked on both lakes.

• The expenditure is as follows :—

Anderson Lake.....	\$ 1,209 57
Kennedy Lake.....	1,289 13
Total	<u>\$ 2,498 70</u>

COLUMBIA RIVER, ABOVE GOLDEN.

The expenditure on this service has been limited to putting in a permanent dam at Bolt's channel and repairing temporarily, to meet high water, the other dams, less substantially built and now seriously impaired in their utility from that cause. The shore connections were repaired and during the winter piles, stone and cordwood were contracted for and delivered on the site of the work required to replace these works by more permanent structures under next year's appropriation.

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The dredge *Muskrat* was, as usual, dismantled and wintered at Golden, but during the spring rise in the river, filled and sank. She was pumped out and floated, and at extreme high water was hauled out and blocked up on the bank. On examination it was found that her sheathing to hull was much decayed and would have to be replaced before she could be floated with safety. As all the dredging likely to be required for some years had been done, the heavy machinery was removed and stored, and such repairs done as to convert her into an effective pile-driver. This will be done by putting in a hoisting engine in connection with the boiler now on board, and which is a very good one, but in the near future a new hull must replace the present one, in which the kelsons and bulkheads are in an advanced stage of decay.

The expenditure for the fiscal year is \$4,993.64.

COLUMBIA RIVER BETWEEN ARROW LAKES.

The work on this service consisted of removing some snags from the steamboat channel at the request of the Canadian Pacific Railway Company, and an extension of the mattrass protection some 1,027 feet northward on the main bank of the river at Cariboo city, which completes as far as I can judge all the work of this character necessary for the present.

The expenditure on the work of protection and cleaning channel in connection with this service is \$13,958.33.

DUNCAN RIVER.

The work this year was in every way more satisfactory than last. The Upper and Lower Duncan rivers from Kootenay to Healey's Landing were cleared of sweepers and overhanging trees and some snags removed.

The expenditure was \$1,968.29.

FRASER RIVER IMPROVEMENT.

Some necessary repairs were made to mattrassing where damaged by water and in raising, extending and strengthening the shore connections of the dam closing the breach of the north-west through the sand heads. This dam appears to be satisfactorily filling the object of its erection and has diverted the water into its original channel.

The expenditure incurred in connection with this service was \$33,053.59, including \$23,070.94 for dredging.

SALMON RIVER.

This appropriation has been expended in clearing the channel of obstructions to the driving of logs and in some cases cutting a channel through points to give better direction and less liability to jam. This work was done this spring and the lumber company express themselves as quite satisfied with the improvements as far as we were able to go with our limited appropriation, but the work will be continued to the upper reaches of the river as our funds enable us to continue the work of improvement, beginning at the mouth and doing the work as thoroughly as possible as we proceed.

The expenditure is \$4,952.12.

SKEENA RIVER.

The importance of this river is now so well established that further comment is unnecessary in this connection.

The work of improvement to navigation this year was not as satisfactory as hoped. An unusually mild winter and a consequently high average stage of water prevented working at points intended and which under more favourable conditions could have been worked to advantage, operations were confined almost exclusively to the Kitsalas Canyon, which has now been completed as far as desirable or advisable, and, with possibly the addition of a few ring-bolts, would seem to meet the approval and requirements of the steamer men.

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The snag scow, with the installation of boiler and hoisting engine and with her own propelling power, by sprocket chain and stern-wheel attachment, has proved very satisfactory. As the water in the Skeena to the head of tide is brackish the hull has been fitted with two tanks holding a sufficient supply of fresh water from which, by means of an injector, the boilers are fed.

The expenditure in connection with both rock-work and snagging is \$6,476.38.

VICTORIA HARBOUR.

The work consisted in the continuation of the work of removal of Tuzo Rock by blasting, the removal of Tuzo shoal by the dredge *Mud Lark*, and a commencement of the work of deepening the inner harbour for the accommodation and berthing of the sealing fleet—some 40 vessels—which use this portion of the harbour for berthing or laying up during the close season. The *Mud Lark* left for Nanaimo on October 23, before completing this latter work. This and a very much needed extension of the wharf constituted the work on this service.

The expenditure was as follows:—

Removal of Tuzo Rock, &c.....	\$11,088 83
Enlarging wharf.....	901 59
	<hr/>
	\$11,990 42
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WILLIAMS HEAD QUARANTINE STATION.

The work on this service was confined almost exclusively to the improvement of the water service by replacing the defective mains with new 4-in. cast-iron pipes—for which some 3,000 lineal feet was purchased and laid.

Automatic Chabot air valves were put in working order to the marked improvement of the entire service, increasing the pressure and supply at the station materially. Much still remains to be done in this direction before the supply can be considered satisfactory.

The road connecting the station with the trunk road from Victoria to Metchosin, some 2½ miles, has been much improved by grading down the worst hills, renewing the bridges, and giving proper drainage to the road-bed. During quarantine this road is used by the tradesmen of Victoria furnishing supplies to the station as communication by water is not always available. It was consequently desirable that the road should be kept in repair. The work has been well done.

The following is the expenditure, \$5,978.17.

YUKON.

FIVE FINGERS RAPIDS.

The difficulties at Five Fingers are due to the shallowness of the water and the 14-inch fall which occurs at high water.

The bottom of the river is a species of natural rock dam, parts of which were blasted away.

Last year the channel between the two first islands was forcing boats on a projecting rock. Several boats met with accidents as the point projected 18 feet out of the wall.

During the present fiscal year the work of improving this channel was done under 4 to 6 feet of ice and 78 cubic yards of rock were blasted.

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The work was almost complete when the river opened for navigation and it was impossible to continue, but the channel was so much improved that steamboats could go up stream without the use of the cable.

Expenditure during the fiscal year was \$3,347.12.

THIRTY MILE RIVER.

Rocks were blasted and removed from the channel, the quantity being 167 cubic yards and the cost \$1,347.59.

UPPER LABERGE.

Upper Laberge is situated at the foot of the Fifty Mile River, the head of Lake Laberge and 25 miles below White Horse.

Three dams were constructed to give a deep and straight channel. The dams are respectively of 3,700 feet, 2,440 feet and 400 feet. This last one, composed of brush and stone, was completed in 1900-01.

These dams consist of two rows of piles, 10 feet apart. In the front row the piles are, at every 5 feet, braced with walings and the other row consists of piles 10 feet apart, braced to the front corresponding one with cross pieces.

The space between the piles is filled with brush and stone.

The piles are 4 feet above low water and at every 40 feet stands a 14-foot pile to indicate the channel.

During the present fiscal year 5,070 feet of dams were built. These were composed of 2,037 piles, 4,050 feet of walings, 4,654 cross pieces, 8,682 brush rolls, 865 tons of rock, 920 sacks filled with gravel and 540 18-inch bolts.

Expenditure was \$18,667.11.

(The following reports on works done, in the Provinces of Quebec and Ontario, were received too late for distribution in their proper places.)

QUEBEC.

COTEAU LANDING.

Coteau Landing, the chef-lieu of the county of Soulanges, is situated on the north shore of the St. Lawrence, at the foot of Lake St. Francis, 36 miles above Montreal, and two miles from Coteau station on the Grand Trunk railway.

Construction.—In 1871 a mooring pier was built by the department at a distance of 880 feet from shore, and in February, 1872, a contract was entered into for the enlargement of the pier and its connection with the shore by a block and span approach. The work was completed in October, 1875, at a cost of \$11,453.88. It consists of a head block 249 feet long and 24 feet wide, with an ice-breaker 30 feet long at its upstream end, and of an approach 880 feet long and 12 feet wide, except for a length of 92 feet near the head block, where it is 24 feet wide, to give vehicles room to pass. The head block and the portion of the approach, 92 feet in length immediately adjoining, are built of open-face crib-work, filled with stone ballast, and the remaining portion, 788 feet in length of the approach, is a block and span structure. The outer face of the head block is 18 feet high above the bottom of the river and stands in 12 feet of water at low water.

Repairs.—Minor repairs were effected to the pier in 1882 at a cost of \$8. The structure was considerably damaged by ice in the spring of 1896 and was thoroughly repaired during the same year at a cost of \$1,544.42. In 1889 the department commenced the reconstruction of the block and span approach, which was completed during the year 1889-90 at a cost of \$4,005.91. The new approach has a general width of 12 feet. In 1891 the reconstruction of the head block, 279 feet long, 24 feet wide, was commenced, it was completed in 1892 at a cost of \$5,658.42. In 1897 the wharf was

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again thoroughly repaired, some of the stringers were renewed and the whole of the approach and a portion of the head block were refloored with hemlock planks, 4 inches in thickness, at a cost of \$1,797.03.

During the year 1898 the outer face of the head block was resheathed with 6-inch hemlock, at a cost of \$314.20.

During May and June last the following repairs were made: the eastern half of the outer block was renewed from the low water level to the top and refloored with 4-inch, hemlock planks, some stringers of the approach were renewed and the floor repaired, the roof of the storehouse was renewed with corrugated galvanized iron and some minor repairs made.

GREECE'S POINT.

Greece's Point, in the county of Argenteuil, is a small post village, situated on the north shore of the River Ottawa, at the foot of the Grenville canal.

The construction of a wharf at that place was commenced in September, 1901, and completed in June, 1902.

The structure is a strong close-faced crib-work, 90 feet in length, by a width of 60 feet, close and parallel to the shore; the outer face has a height of 31 feet and stands in 13 feet at extreme low water, and is 3 feet above extreme high water.

As the pressure of the ice is great at that place the structure is very strong; there are vertical posts, 12 x 12 in. at the intersection of the cross-ties with the face timber, and three at each outside corner secured to the face timber and cross ties with 1-in. machine bolts.

The outside corners are sheathed with rock elm, 10 inches thick and covered with steel plates, 6 x 12 ft. x $\frac{1}{8}$ inches.

There is on the north side of the public road opposite and in connection with the wharf a storehouse, 18 x 24 ft., and a cattle yard, 32 x 80 ft., fenced.

The work was carried out by day labour. The amount expended during the present fiscal year is \$3,498.49.

GRAHAM.

Graham, a post village in the municipality of Como, is situated on the south shore of the Lake of Two Mountains, in the county of Vaudreuil, 13 miles west of Vaudreuil, and 4 miles east of Rigaud; it is a station on the Canadian Pacific railway called 'Lavigne.'

Mr. William Graham of the locality, owned an old wharf, which he transferred to the government, free of charge, with a right of way from the public road, at the foot of La Montée Ste Marthe to the wharf, a distance of 435 feet, by a width of 30 feet.

The wharf was so dilapidated, that it had to be entirely rebuilt

The new structure consists of the following:—

(a.) A solid stone embankment 240 feet long, 24 feet wide on top with slopes, each side, of one in one.

(b.) A pile-work block head 98 feet long and 33 feet wide.

(c.) A storehouse and waiting room, 18 x 24 feet.

The work, carried out by day labour, was commenced in September, 1899, the wharf was opened to traffic in June, 1900, and entirely completed in November of the same year. The amount expended during the present fiscal year is \$899.86.

The storehouse being inadequate to accommodate the increased traffic on that wharf, and especially the poultry traffic, a small storehouse, 15 x 15, was erected on the south-west angle of the wharf and approach in June, 1902, at a cost of \$154.36.

HUDSON.

Hudson, in the county of Vaudreuil, is situated on the south shore of Lake of Two Mountains; it is a favourite summer resort.

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In October, 1901, the old wharf of Mr. John McNaughton was transferred to the department for the sum of \$800. As that old wharf was entirely rotten and dilapidated, it was removed to the low water level, and a new wharf was built with an extension of 20 feet long, by 20 feet wide, at the eastern end.

The new wharf is composed of close faced crib-work of a total length of 102 feet by a width of 20 feet, and a stone embankment or approach of a length of 135 feet, from the shore to the head block, by a width of 20 feet for the first 92 feet from the shore and a width of 42 feet for the remaining 43 feet to the head block, with slope one in one and guard railing. A storehouse, 18 by 24 feet with waiting room, was erected at the western angle of the head block and approach.

The work was carried out by day labour. At the end of the fiscal year, the work was not completed.

The amount expended, including the purchase price, is \$3,999.40.

LANORAIE.

During November and December of the present fiscal year, repairs to the wharf were commenced. They consist in building an ice-breaker along the western side of the approach, from the shore to the head block.

The ice-breaker is built of round timber.

On the eastern side, there are braces 12 in. x 12 in. at every 10 feet, put at an angle of 45° with the side of the approach and secured at the bottom to a longitudinal piece 12 in. x 12 in. well anchored to the ground in a bed of stone.

The work, carried out by day labour, was completed at the end of June last.

LAPRAIRIE.

Laprairie, the chief town of the county of the same name, is situated on the south shore of the River St. Lawrence, 7 miles above Montreal.

During the fiscal year 1901-2, the western ice-breaker, which was much rotted and dilapidated, was removed, and a new one of the same size was built in its place.

The work was carried out by day labour at a cost of \$1,057.02.

SABREVOIS.

The parish of Ste. Anne de Sabrevois, in the county of Iberville, is situated on the east shore of the River Richelieu, 7 miles from Iberville and 6 miles from St. Alexandre, on the Canadian Pacific railway. It is a station of the East Richelieu Valley railway. It has the largest creamery in the province of Quebec, two cheese factories, one hotel, three stores, one door and sash factory, one post and telegraph office, and two churches, one Roman Catholic and one Protestant.

In order to better accommodate the traffic by water-way to and from this place, an old wharf with a right of way from the public road to the river, a distance of 1,372 feet, was purchased from Mr. Wm. Ryan, for the sum of \$500. As the old wharf was dilapidated, a new wharf was built in its place.

The new structure consists of the following, viz:—

(a). A stone embankment 200 feet long by 20 feet wide, with slopes 1 in 1.

(b). A trestle approach 120 feet long, 24 feet wide.

(c). A head block of pile-work 108 feet long, parallel to the channel, by a depth of 30 feet, with an ice-breaker at its upstream end, of solid crib-work.

The work, carried out by day labour, was commenced in February, 1900.

The work was continued during the next fiscal year and completed in November, 1900.

In June, 1902, the sum of \$998.07 was expended to raise, improve, and fence the roadway.

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STE. ANNE DE BELLEVUE.

During September and October, 1901, the sum of \$699.73 was expended to build an extension at the east inner face of the wharf, 30 x 40 feet, and to raise to an average of two feet, a strip of land 30 feet wide along the inner face of the wharf, which had been purchased to enlarge the wharf.

The wharf is now in good order and offers ample accommodation to the growing traffic carried on there.

STE. ANNE DE LA PÉRADE.

Ste. Anne de la Pérade, in the county of Champlain, is situated on the north shore of the River St. Lawrence, 53 miles above Quebec. The River Ste. Anne, one of the tributaries of the St. Lawrence, divides the village.

At the session of 1894 a sum of \$10,000 was voted for the protection of the village, the municipality having subscribed the sum of \$5,000.

The proposed works were done during the winter of 1895, and consisted of five dykes.

The dykes are: No. 1, 140; No. 3, 340 and No. 4, 435 feet in length, respectively; the fifth, near the Canadian Pacific railway bridge, is 340 feet in length, and that of the little channel on the west side of the river, is 550 feet in length.

These dykes consist of two rows of piles, driven 10 feet apart, and filled with brush loaded down with stone.

It is to be remarked that the soil where the piles have been driven, is a fine sand taken down by the river from the landslide at St. Albans, the bed of the river having been raised 6 feet at Ste. Anne.

A sum of \$14,906.05 was expended during the year 1895.

During the fall of 1895, work was executed for the removal of trees, stumps, &c., accumulated in the little channel owing to the landslide at St. Albans.

During the winter of 1896 dyke No. 1 was reconstructed for a length of 220 feet, and No. 5 was repaired. These dykes experienced considerable damage by the breaking of the ice in December, 1895.

During the months of November and December, 1900, and January 1901, some repairs were made to dykes Nos. 1 and 2, and a round timber crib-work, with an under bed of brush, the whole loaded with stone, was constructed for a length of 400 feet by a width of 10 feet and a height of 8 feet, from the foot of dyke No. 1 to the shore.

The object of that work was to protect the dykes Nos. 1 and 2, which were liable to be carried away, or, at least, seriously damaged by freshets, owing to a wash-out from the foot of dyke No. 1 to the shore, of about 60 feet wide, and to prevent a landslide opposite the dykes.

It has proven its utility during the late freshets, when no damage was caused.

During the last fiscal year, the sum of \$2,997.17 was expended, as follows, viz: \$2,090.23, to pay the balance due on the work carried out during the previous fiscal year, and \$906.94 to procure stone to riprap a portion of the west side of the west channel, from the Canadian Pacific railway bridge, to the Municipality bridge, in order to protect that part of the village against probable landslide caused by the increased quantity of water now passing through that channel.

Though the dykes are dilapidated to some extent, they require no immediate repairs, as they are partly filled with sand, and might probably become entirely covered, because the greatest part of the river now flows through the west channel.

STE. GENEVIÈVE.

During the present fiscal year, repairs were made to the pier at that place; they consist in renewing a number of stringers between the cribs, part of the flooring and repairing the guard railing.

The work was carried out by day labour at a cost of \$1,106.52.

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ST. LAMBERT.

The town of St. Lambert is situated on the south shore of the St. Lawrence, directly opposite Montreal, in the county of Chambly and Verchères, district of Montreal. Population about 1,500.

In order to protect the bank of the river opposite the town against damages caused by the ice during the spring floods, it was decided to build a protection wall 800 feet long.

The work was commenced in October, 1900, and in February, 1901, 310 feet were completed.

It is a solid crib-work structure 20 feet wide at the base, set at 1 foot above low water level, 5 feet wide at the top, with a slope 1 in 1 and 20 feet high.

The slope is sheathed with tamarack 8 inches thick, the top is covered with hemlock 6 inches thick; the space between the protection wall and the top of the bank and the whole structure is filled in with stone.

The work was done by day labour at a cost of \$9,993.05. The protection wall was continued during the present fiscal year, a length of 425 feet was built and rip-rap, 175 feet in length was erected at the east end of the protection wall.

The work, carried out by day labour, was entirely completed in April last, at a cost of \$1,500.13.

The total length of that protection wall is 715 feet besides 175 feet of rip-rap.

During June last, a movable guard railing of a length of 675 feet was placed on top of the protection wall at a cost of \$500.09.

The work is in good order and gives general satisfaction.

ST. MARC.

St. Marc, in the county of Verchères, is situated on the western side of the River Richelieu, about 10 miles from Belœil.

In August 1901, the construction of a new wharf, at the site of an old wharf, built by the citizens of the locality, about two miles above the village, was commenced. It consists of a head block of pile-work, laid at the outer face of the old wharf; it has a length of 87 feet, by a width of 16 feet for the 63 upstream feet, and a width of 32 feet for the remaining 24 feet; at its upstream end there is a close-faced crib ice-breaker, 4 feet higher than the flooring of the head block. The outer face of the head block is 16 feet high, and stands in 9 feet at the lower stage of the water.

The old wharf, which is used as an approach to the new one, has been raised about 4 feet to the level of the floor of the head block, with stone and a layer of gravel and sand on top, and stone walls, with slopes 1 in 1, have been built on both sides.

The work was completed in June, 1902, and is in perfect order. Total cost, \$3,245.67.

ST. MATHIAS.

St. Mathias, in the county of Rouville, is situated on the south side of the River Richelieu.

It had been decided to build a landing pier at that place, but owing to some difficulty in the purchase of the right of way, nothing was done during the fiscal year 1900-1 excepting the purchase of a quantity of timber that was procured at a cost of \$1,073.55.

During the last fiscal year 1901-2, the purchase of right of way not being completed, only materials were procured at a cost of \$1,189.88.

ST. SULPICE.

St. Sulpice, in the county of L'Assomption, is situated on the north shore of the River St. Lawrence.

In order to accommodate the residents of l'Isle Bouchard, to land their market produce with row-boats at St. Sulpice, a landing platform was constructed during the

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present fiscal year; it has a length of 300 feet by a width of 3 feet, and a height of 4 feet at the outer end; it is laid on bents sunk into the ground 6 feet apart, and filled in with stone.

The work was carried out by day labour at a cost of \$261.11.

ST. ZOTIQUE.

The St. Zotique pier is situated on the north shore of Lake St. Francis in the county of Soulanges, about $2\frac{1}{2}$ miles above Coteau Landing. It consists of a block or a wharf proper 132 feet 4 inches in length, by 24 feet in width; the approach is composed of 34 piers placed at intervals of 20 feet, and varies from 8 to 12 feet in width.

During the fiscal year 1893-4, the sum of \$2,490.75 was expended in reconstructing part of the work and in repairs. During May and June, 1902, the following repairs were executed, viz: The ice-breaker was resheathed with rock elm 8 inches thick, part of the head block and approach were refloored, several stringers were renewed, the south-east corner of the head block was sheathed with rock elm and covered with steel boiler plate, the last tier of face timber of the head block was also renewed, and repairs to the storehouse and guard railing were made.

The work was carried out by day labour at a cost of \$1,099.61.

VALLEYFIELD (RIVER ST. LOUIS CANAL FEEDER).

During the present fiscal year, repairs were made to the three bridges on the River St. Louis canal feeder.

The works were carried on by day labour at a cost of \$903.97.

Those bridges are now in good order.

ONTARIO.

LANCASTER.

The town of Lancaster, situated in the county of Glengarry, Ont., 54 miles west of Montreal, has a population of about 1,000; it is a station on the Grand Trunk railway.

South Lancaster is situated one mile and a half south of Lancaster, on the north shore of Lake St. Francis.

In February, 1901, the construction of a wharf was commenced. It consists of a head block 84 feet in length by a width of 72 feet, on piles, and a solid stone embankment, 356 feet long, from shore to head block, by a width of 20 feet at the top, with slope one in one on both sides; a storehouse and waiting room was erected thereon.

In May, 1901, the wharf, though not completed, was open to traffic.

During the present fiscal year the wharf was completed and a cattle yard 80 x 150 feet, was purchased and fenced in.

SUMMERSTOWN.

Summerstown, in the county of Glengarry, is situated on the north shore of Lake St. Francis, 8 miles east of Cornwall.

During the month of November, 1900, some temporary repairs were done, especially to the flooring of the wharf.

The work was carried out by day labour at a cost of \$554.61.

From March to June inclusive, 1902, the wharf was thoroughly repaired. The head block was removed to the low water level, and rebuilt with close-faced 12 x 12 inch timber to a height of 4 feet; the span from the shore to the pier of the approach, was

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filled in with stone. That pier was also incased in stone, forming a solid stone embankment of a length of 65 feet, by a width of 20 feet at the top, with slopes one in one at each side and at the end; the space of 20 feet from the stone embankment and the head block is spanned with stringers and floored with 3-inch pine deals, the head block being floored the same; its two outside corners are sheathed with steel boiler plate, 6' x 6' x $\frac{1}{8}$ ". The fence of the cattle yard was renewed and painted, and the storehouse was repaired and painted. The wharf is now in very good order.

The work was carried out by day labour at a cost of \$895.07.

WENDOVER.

Wendover, in the county of Prescott, is situated on the south shore of the River Ottawa, opposite North Nation Mills, a station of the Canadian Pacific Railway Company; the nearest railway station is Plantagenet, distant about 8 miles.

The construction of a wharf was commenced in September, 1901; it consists of the following, viz. :—

(a.) A stone embankment, of a length of 160 feet from the shore by a width of 18 feet at the top, with slopes one in one, and a height of 12 feet at the north end.

(b.) A trestle or pile approach, of a length of 342 feet from the stone embankment to the head block, by a width of 18 feet for 294 feet and a width of 60 feet for the remaining 48 feet adjacent to the head block.

(c.) A head block of pile work laid at an angle of eighty-two degrees, thirty minutes with the approach, of a length of 71 feet by a width of 32 feet, with a close-faced crib ice-breaker at its upstream end, of a length of 37 feet by a width of 24 feet.

The water at its outer face has a height of 27 feet, stands 10 feet at the low stage of the water, and is 3 feet above the high water level.

There is a floor of a length of 34 feet by the width of the wharf adjacent to the ice-breaker, 8 feet above the low water level, with a slip 38 feet long by 11 feet wide, of a slope of one in five through the approach.

A storehouse with waiting room, 20 x 36 feet, erected on the approach adjacent to the inner face of the wharf, along the eastern side of the slip.

Three clusters of 30 piles each, well bolted together, are placed at equal intervals between the wharf and the shore to protect the pile approach against the ice.

The work was carried out by day labour.

The wharf was opened to traffic in June last.

At the end of the present fiscal year the work was completed, except the stone approach, which must be raised 3 feet, and more braces put on the approach, to give better resistance against the ice.

The expenditure to June 30, 1902, was \$6,502.22.

DREDGING OPERATIONS.

During the fiscal year 1901–02 dredging was done in the following places :—

PROVINCE OF NOVA SCOTIA.

Cheticamp, Inverness county.

Cribbins Point, Antigonish county.

Digby, Digby county.

Dominion Coal Co., Louisburg, Cape Breton county.

Dominion Coal Co., Sydney, Cape Breton county.

Liverpool, Queens county.

N. S. Steel and Coal Co., Cape Breton county.

St. Mary's River, Guysboro' county.

Yarmouth, Yarmouth county.

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PROVINCE OF PRINCE EDWARD ISLAND.

Hurd's Point Pier, Prince county.
 Murray River, King's county.
 Summerside, Prince county.
 Victoria, Crapaud, Queen's county.

PROVINCE OF NEW BRUNSWICK.

Canada Eastern Railway, York county.
 Chipman and Briggs Corner, Queens county.
 Douglas Booms, York county.
 French Lake, Sunbury county.
 Fredericton, York county.
 I. C. Ry. Terminus, St. John county.
 Kennebecasis, St. John county.
 McClure Shoal, Queens county.
 Murray & Gregory's, St. John county.
 Ox Island, Sunbury county.
 Springhill, York county.

PROVINCE OF QUEBEC.

Blanche Shoals	Papineauville
Chateauguay Basin	Pointe Claire
Coteau Landing	St. Ignace Island
Dorval	St. Johns.
Graham	St. Michel de Bellechasse
Grenville	Sorel
Iberville	Valleyfield
Lachine	Yamaska river.
Masson	

PROVINCE OF ONTARIO.

Adolphustown	Kingsville
Bath	Midland
Besserer	Notre Dame de Pierreville
Bowmanville	Oshawa
Bronte	Ottawa River
Burlington	Owen Sound
Calumet	Pickering
Collingwood	Port Arthur
Hamilton	Port Hope
Hawkesbury	Port Stanley
Kaministiquia River	Rondeau
Kincardine	Trenton.

PROVINCE OF MANITOBA.

Red River.

PROVINCE OF BRITISH COLUMBIA.

Chilliwack	Pender
Comox	Skeena River
Ladner	South Westminster
Nanaimo	Victoria Harbour.

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DREDGING PLANT.

The following is a summary description of the dredging plant owned and operated by the Public Works Department in the various parts of the Dominion.

MARITIME PROVINCES.

The self-propelling elevator dredge *St. Lawrence* (iron hull)—

Length over all	175 feet.
Beam	30 "
Draft when loaded, aft.	13.5 "
" " forward	8.5 "
Least working depth (ladder with 32 buckets dropped 30 feet from bow).	8.5 "
Greatest working depth (bucket ladder dropped 40 feet from bow).	28.0 "
Capacity of hopper for spoil material.	350 cubic yards.
Speed when light	6 to 7 miles per hour.
Speed when loaded.	3 to 4 "
Daily rate of dredging in hard material.	350 to 700 cubic yds.
" " ordinary earth	750 to 1,000 "
" " soft material.	1,050 to 1,400 "

The self-propelling elevator dredge *Canada* (iron hull)—

Length over all	130 feet.
Beam	20 "
Draft when loaded, aft.	11.5 "
" " forward	7.0 "
Least working depth.	7.0 "
Greatest working depth (ladder 24 buckets).	16.0 "
Capacity of hopper for spoil material.	90 cubic yards.
Speed when light and newly painted.	6 to 7 miles per hour.
Speed when loaded.	3 to 4 "
Daily rate of dredging in hard bottom.	180 to 270 cubic yds.
" " with ordinary digging	180 to 360 "
" " in soft material	360 to 450 "

The spoon dredge *New Dominion* (wooden hull)—

Length over all.	90 feet.
Width.	28 "
Draft.	5½ "
Greatest working depth.	21 "
Daily rate of dredging in hard material.	300 cubic yards.
" " with ordinary material.	450 "
" " in soft material.	600 to 700 "
Number of dump scows or barges used.	4 (2 are condemned).

The spoon dredge *Prince Edward* (wooden hull)—

Length over all.	80 feet.
Width.	28 "
Draft.	6 "
Greatest working depth.	21 "
Daily rate of dredging in hard material.	300 cubic yards.
" " with ordinary material.	500 "
" " in soft material.	600 to 700 "
Number of dump scows or barges used.	3

The spoon or dipper dredge *George McKenzie* (wooden hull)—

Length	90 feet.
Width.	28 "
Draft.	6 "
Greatest working depth.	22 "
Daily rate of dredging in hard material.	350 cubic yards.
" " ordinary material.	500 "
" " soft material.	600 "
Number of dump scows or barges used.	3

The boom and dipper dredge *Cape Breton* (steel hull)—

Length	91 feet.
Beam.	36 "
Draft.	7½ "
Greatest working depth.	34 "
Daily rate of dredging in hard material.	1,000 cubic yards.
" " ordinary material.	1,500 "
" " soft material.	2,000 "
Number of barges used (each of 210 cubic yards capacity, steel).	2

The clam shell dredge *New Brunswick* (wooden hull)—

Length over all.	90 feet.
Width.	25 "
Draft.	2½ "
Greatest working depth	17 "
Daily rate of dredging in hard material.	180 cubic yards.
" " ordinary material.	300 "
" " soft material.	450 "
Number of decked scows used.	3

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MARITIME PROVINCES—*Concluded.*

One pile driver, engine and boiler fitted on scow.
 One stone lifter, engine and large grips (no boiler).
 One (old) small scow for coal belonging to *New Dominion* at St. John, condemned.
 Two old side hopper scows at Pictou, unfit for use, belonging to *Prince Edward*.
 One old side hopper scow unfit for use, belonging to *George McKenzie*, at Pictou.
 The steam launch *Cricket*—

Length.....	36 ft. 5 in.
Beam	7 " 3 "
Hold	3 " 10 "
Draft.....	3 " 00 "

Two compound condensing engines 10 x 4½-in., cylinders 6-in. stroke.
 N.B.—Tug service performed by hired tugs in the Maritime Provinces.

PROVINCE OF NOVA SCOTIA.

DREDGING AT CHETICAMP, INVERNESS COUNTY.

Cheticamp harbour is on the north-west coast of Cape Breton, about midway between Capes Mabou, and St. Lawrence. It lies between Cheticamp Island and the mainland on the Gulf of St. Lawrence, 58 miles north of Mabou, with a population of about 2,000.

There is a depth of 21 feet within the harbour, but in 1875 there was only 2 feet at low water on the bar at its entrance, and the greater part of it dry; this has been increased to 13 feet at low water, equal to 16 feet at high water. The harbour is entered from the north-east through a dredged channel 80 feet wide between the Shingle Spit at Cape Cross on the north-east extremity of the island and Caveau Point. There is good anchorage for the largest vessels inside, and numbers of fishing and other vessels run here, for a harbour of refuge, in bad weather. There are several wharfs, and a government pier in the harbour.

A large amount of dredging has been done by the department at this place, and during the fiscal year 1901-02 the dredge *George McKenzie* was engaged between the 12th July and 12th November in deepening the channel to 21 feet at l. w. s. t., the material removed being 17,145 cubic yards, sand and gravel at a cost of 56.13 cents per cubic yard, making the entire dredging at this place 187,885 cubic yards, and the cost \$62,477.62, or 35.38 cents per cubic yard. A set of range lights on the mainland, gives the course through the dredge channel, but it must be understood that until the 21 foot channel is completed but 13 feet of water is available in the channel.

DREDGING AT CRIBBINS POINT, ANTIGONISH COUNTY.

As a sequence to my last report the work was continued from 1st to 12th July, removing the further quantity of 1,810 cubic yards, and completing the work at a cost of \$4,125.19, or 88.23 cents per cubic yard. The place was much exposed to gales and heavy seas. To perform the work two tugs were required to be in attendance to remove the dredge and plant to Bayfield, 8 miles distant, for shelter and protection when the weather was unfavourable and unfit for work.

DREDGING AT DIGBY, DIGBY COUNTY.

Digby the shire town of the county of Digby, with a population of about 1,500, is beautifully situated on the south-western end of the Annapolis basin. It is an important station on the Dominion Atlantic Railway, 67 miles north from Yarmouth, 150 miles from Halifax, 20 miles from Annapolis, and is a port for arrival and departure of the daily steamer of the Dominion Atlantic Railway, plying between St. John, New Brunswick and Digby. The harbour is open at all seasons, and well protected from

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nearly all quarters. Previous to the present fiscal year \$5,056.29 had been expended in improving the basin and entrance to the Digby pier by dredging, and from April 23 to June 30 in the present year the dredge *Cape Breton* was engaged removing 31,395 cubic yards of sand, gravel and mud, at a cost of \$5,187.74, or 16.52 cents per cubic yard, forming a basin 675 by 300 feet, and 60 feet wide, 250 feet from side of pier out toward deep water. Further dredging is required here to complete the work.

DREDGING AT DOMINION COAL CO.'S PIER, LOUISBURG, C.B.

Louisburg, a seaport of Cape Breton, on the south-east shore of the island, 30 miles by rail south-east of Sydney, has a good harbour open the year round. The Dominion Coal Company have large piers erected for shipping purposes and connected by rail with their several coal mines and with Sydney.

In removing a shoal from the front of and to give greater depth of water at the loading pier, the dredge *St. Lawrence* was engaged from July 15 to October 9, removing 22,310 cubic yards of mud, sand, gravel, logs, timber and boulders, at a cost of \$5,480.52, or 24.56 cents per cubic yard. The dredging was to 27 feet. Spring tides rise 5 feet, neaps 4 feet.

DREDGING AT DOMINION COAL CO.'S PIERS. SOUTH SYDNEY.

Sydney harbour is one of the finest ports on the coast, being equally easy of access and egress, and capable of containing a large number of vessels in safety. It is 3 miles wide at the outer entrance, but the navigable channel contracts rapidly to the breadth of half a mile between the two bars, which are of sand and shingle, and extend from the shore on either side, at 5 miles within the lighthouse on Flat Point.

Inside these bars the harbour divides into the west and south arms, the former being open to east-north-east winds, except at the coal loading ground, where vessels anchor under shelter of the north-west bar, and at North Sydney, where they may lie in like manner under Allen Point. The south arm, being completely sheltered from the sea by the south-east bar, affords safe anchorage. The town of Sydney, $3\frac{1}{4}$ miles up this arm, is exceedingly well situated on the west side and summit of a peninsula 55 feet high. It has deep water close to its wharfs, and the arm continues navigable for vessels to Sydney Bridge, a distance of two miles.

A steam ferry runs between Sydney and North Sydney. There are three patent slips at North Sydney capable of taking out of the water vessels of 200 to 1,500 tons.

Spring tides rise at the bar $3\frac{3}{4}$ feet, neaps $2\frac{1}{3}$ feet, and at the town 5 and 4 feet.

From October 10 to November 18 the dredge *St. Lawrence* was engaged in improving as far as possible the depth of water at the Dominion Coal Company's piers in Sydney harbour to 27 feet, removing 8,317 cubic yards stone, sand and mud, at a cost of \$3,123.34, or 37.56 cents per cubic yard.

DREDGING AT LIVERPOOL, QUEEN'S COUNTY.

The town of Liverpool, at the head of Liverpool bay, on the south-east of Nova Scotia, is in the county of Queen's, and has a population of about 2,500; taking in the village of Milton, two miles farther up the river, and where there are important saw-mills, this population is increased to about 4,000. These places carry on an extensive trade with Halifax, the United States and the West Indies. Liverpool harbour is never frozen over.

Spring tides rise 8 feet, and neap tides 5 feet. The dredging done in this harbour by the department previous to the present season was near the entrance of the River Mersey abreast the town; a bar over which there were but 5 feet being reduced to give 13 feet of water in a channel 175 feet wide, and improvements in the harbour channel and approaches to the wharfs, a total quantity of 33,730 cubic yards of sand, silt and sawdust being removed at a cost of \$9,960.70. Filling in having taken place, the dredge *Canada* operated on the bar from April 27 to June 30 in the present year, removing the further quantity of 9,900 cubic yards of sand, silt and sawdust, at a cost of \$4,253.65, or 42.06 cents per cubic yard, and was continuing the work at the close of the fiscal year.

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DREDGING AT THE NOVA SCOTIA STEEL AND COAL CO.'S PIER, NORTH SYDNEY, CAPE BRETON COUNTY.

North Sydney, distant $5\frac{1}{2}$ miles, is on the north side of the west arm, and is also a point of shipment for large quantities of coal. The anchorage is sheltered by the north bar. North-westerly winds throw a heavy sea upon the bar and wash the sand into the harbour. From April 29 to May 29 in the present year the dredge *St. Lawrence* was engaged deepening to 27 feet, where possible, at the front and sides of the Nova Scotia Steel and Coal Company's piers at North Sydney, removing 10,150 cubic yards of rock, sand, old timbers and silt, at a cost of \$2,124.06, or 20.92 cents per cubic yard, and greatly improving the facilities for shipping the output from the mines.

DREDGING AT ST. MARY'S RIVER, GUYSBORO' COUNTY.

St. Mary's river flows into the Atlantic ocean, 112 miles E.N.E. of Halifax. Large quantities of deals and other lumber are shipped. At the mouth of the river is a sand bar or shoal about 1,800 feet across, from 15 feet depth outside to 15 feet depth inside the bar.

The dredge *St. Lawrence* was engaged from July 11 to November 17, 1900, and from May 3 to June 30, 1901 in dredging this bar to 15 feet at l.w.s.t., removing 47,687 cubic yards of sand, gravel and boulders, and during the present fiscal year from July 1 to 14, 1901, and June 9 to 30, 1902, continued the work; removing a further quantity of 8,925 cubic yards of sand and gravel, at a cost of \$2,749.99, or 30.81 cents per cubic yard, and the work is being continued on the bar and on a shoal a distance up the river.

DREDGING AT YARMOUTH, YARMOUTH COUNTY.

A county at the western extremity of Nova Scotia, bordering on the Atlantic, and intersected by Tusket river. The coasts are deeply indented, and the surface is extremely diversified with mountains, rivers and lakes. Area 752 square miles. Yarmouth is the shire town of the county on a small bay 88 miles from Annapolis, and 205 miles south-west of Halifax. The surrounding country is fertile and well cultivated.

The channel leading to the wharfs is narrow and circuitous but well marked with buoys and dolphins. The anchorage within Bunkers Island is safe from all winds. The dredging operations were continued, that have been in progress for a number of years, with several intermissions. The work comprises the widening, deepening and improving the channel from along the water front to deep water in the sound, and a large amount has been done, generally to a depth of 16 feet l.w.s.t., and the navigation of the harbour has been greatly improved. The total dredged area covers a length of over 4,200 feet with a width varying from 61 to 345 feet.

During the fiscal year 1901-02 the dredge *Canada* operated from October 26, 1901 to February 3, and March 27 to April 26, 1902, and removed the further quantity of 26,190 cubic yards of mud and shells, at a cost of \$5,963.13, or 22.37 cents per cubic yard, when the work was closed until further orders.

PROVINCE OF NEW BRUNSWICK.

DREDGING AT CANADA EASTERN RAILWAY WHARF, YORK COUNTY.

The dredge *New Brunswick* worked on November 6 and 7 at the above wharf, removing 720 cubic yards silt and sawdust at a cost of \$75.16 or 10.43 cents per cubic yard.

DREDGING AT CHIPMAN BRIDGE TO BRIGG'S CORNER, QUEEN'S COUNTY.

In continuation of my last year's report:—

During the present fiscal year the work was continued from July 1 to 24, from October 24 to 30, 1901 and from April 15 to June 30, 1902, removing the further

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quantity of 50,375 cubic yards, at a cost of 11.20 cents per cubic yard, and the work is being continued.

DREDGING AT DOUGLAS BOOMS, YORK COUNTY.

Douglas booms are situate about six miles above Fredericton on the eastern side of the St. John river, and hold the logs and timber while being made up into rafts to be towed down the river. The channel has filled with sand and silt to the disadvantage of the work. The dredge *New Brunswick* was engaged from September 26 to November 5, removing 14,235 cubic yards sand and silt, and greatly improving the channel at a cost of 10.62 cents per cubic yard.

DREDGING AT FREDERICTON, YORK COUNTY.

The St. John River.—At its mouth is the city of St. John, the winter port of the Dominion, the commercial metropolis, and about 86 miles up the river is Fredericton, the capital of the province.

From August 20 to September 25, 1901, the dredge *New Brunswick* was engaged in deepening to 11 feet summer level, the waters in front of the public wharfs at the city of Fredericton, removing 11,293 cubic yards sand, silt, bark, coal and sawdust, at a cost of 17.95 cents per cubic yard.

DREDGING AT FRENCH LAKE, OROMOCTO, SUNBURY COUNTY.

French lake is situated on the south side of the Oromocto river, about 7 miles above Oromocto village.

The dredge *New Brunswick* continued the work from July 1, to 4, removing the further quantity of 990 cubic yards of clay and mud, at a cost of 13.26 cents per cubic yard, and completing the work most satisfactorily.

DREDGING AT ST. JOHN HARBOUR, WINTER PORT, CITY OF ST. JOHN.

The winter port is situate at the mouth of the St. John river, and owing to the great rise and fall of tide is free from ice all the year. On the east are two deep water terminals of the Intercolonial railway, where the large ocean steamers arrive and take in cargo. A large elevator has been erected in connection with the Intercolonial Railway terminals and deep water government piers. On the west side are the freight terminals of the Canadian Pacific railway, with a modern elevator well equipped for handling grain, in connection with the well-appointed piers and freight sheds erected by the city of St. John.

From July 2, to September 20, the dredge *Cape Breton* was engaged in deepening the water in front of the Intercolonial railway pier to the channel to a depth of 28 feet l.w.s.t. as conditions would permit, removing the further quantity of 22,155 cubic yards at a cost of 16.88 cents per cubic yard, and completing the work. The dredging required to be done as the tides served, a short time each day. Detentions were caused by steamers in the way, boulders and bad weather. The entire work amounted to 41,370 cubic yards, costing \$8,129.77, or 19.65 cents per cubic yard.

DREDGING AT THE ROYAL KENNEBECASIS YACHT CLUB PIERS, ST. JOHN COUNTY.

At Millidgeville, about four miles from St. John, are the club house piers and anchorage of the Royal Kennebecasis Yacht Club, and here the dredge *New Dominion* before going up river was engaged from April 3 to 14, removing 2,025 cubic yards boulders, slabs, edgings and mud, at a cost of \$604.37, or 29.84 cents per cubic yard.

DREDGING AT MURRAY AND GREGORY'S MILLS, ST. JOHN COUNTY.

The dredge *New Dominion* was engaged from November 8 to 16, removing 3,675 cubic yards of mud, at a cost of 6.52 cents per cubic yard.

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DREDGING AT MCCLURE'S SHOAL, SALMOM RIVER, QUEEN'S COUNTY.

The dredge *New Dominion* was engaged from July 25 to October 23, removing 39,525 cubic yards of sand and silt, and improving the channel through this shoal, at a cost of 11·52 cents per cubic yard.

DREDGING AT OX ISLAND SHOAL, ST. JOHN RIVER, SUNBURY COUNTY.

This work, left unfinished by the dredge *New Brunswick* at the close of dredging in the fall of 1900, was taken up by the dredge *Cape Breton* on September 21, and by November 4, completed to ten feet summer level, by the removal of 47,460 cubic yards, at a cost of 9·92 cents per cubic yard.

DREDGING AT SPRINGHILL, RUSSELL AND CHAPEL SHOALS, YORK COUNTY.

Russell and Chapel shoals are about two miles above Springhill, and eight miles above the city of Fredericton, on the St. John river. They had the attention of the department during the present fiscal year. The dredge *New Brunswick* worked from July 5 to August 19, 1901, and from April 11 to June 30, 1902, improving these shoals and removing 25,765 cubic yards of sand, gravel and boulders to a place of deposit three-quarters of a mile distant, at a cost of 20·42 cents per cubic yard, and is vigorously prosecuting the work.

PROVINCE OF PRINCE EDWARD ISLAND.

DREDGING AT HURD'S POINT, PRINCE COUNTY.

Hurd's point, Prince county, is situate on the south side of the southern end of Bedeque or Summerside harbours, and about three miles south of the town of Summerside. The pier is a very important shipping place, being the outlet of a large and rich agricultural district. A channel 2,700 feet in length, 250 feet wide, with a depth of 12 feet at low water, was dredged by the dredge *Prince Edward* in 1884-5 from the deep water channel to the pier, and again in 1898-9, it was employed improving the channel and removing material that filled in. During the present fiscal year this dredge was engaged from July 12 to August 9, improving the depth in channel and at end and side of pier, 6,200 cubic yards were removed, at a cost of 38·67 cents per cubic yard.

DREDGING AT MURRAY RIVER, KING'S COUNTY.

Murray harbour has an exceedingly dangerous bar of sand, over which 10 feet can be carried at low water in ordinary spring tides, but strong easterly winds send in so heavy a sea as to render it at times impassible, a line of breakers extending then completely across the bay from Murray Head, northward to Cody Point, a distance of nearly 2½ miles. Tides rise, springs 6¼ feet, neaps 3¼ feet.

Murray River.—A branch of the Prince Edward Island railway is now being extended from Charlottetown with its deep water terminal, the foundation for which is being dredged to receive it.

From October 26 to December 12, 1901, and from April 25 to June 30, 1902, the dredge *Prince Edward* operated, widening and improving the channel to 10 feet low water, removing 34,110 cubic yards mud, sand and silt, at a cost of 25·31 cents per cubic yard, and the work was in progress at the close of year.

DREDGING AT SUMMERSIDE, PRINCE COUNTY.

Summerside, the shire town of Prince county, and the second largest town of Prince Edward Island as regards population, has a good harbour.

Several wharfs extend from the town into Bedeque Bay harbour. The dredge *Prince Edward* was from July 1 to 11, 1901, engaged continuing the removal of the harbour middle ground, between the end of railway wharf and the lighthouse. From the 10th to 12th, the dredge was engaged in deepening the berths at Queen's wharf, 2,610 cubic yards, mud and sand were removed, at a cost of 52·03 cents per cubic yard.

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DREDGING AT VICTORIA (CRAPAUD), QUEEN'S COUNTY.

Crapaud road is a small but secure anchorage off the mouth of Brockelsby river, and between the eastern part of the Tryon shoals and the land. The space in which vessels may ride in from 12 to 15 feet at low water, is about half a mile long and two cables wide; but the anchorage for small craft, in from 7 to 9 feet, is more extensive, continuing nearly a mile farther to the westward in a narrow channel or cove in the sands which dry at low water. The entrance to this road between the eastern point of the Tryon shoals, and the shallow water off the shore to the eastward is only 180 yards wide, and carries 9 feet at low water spring tides. A dredge channel with a depth of 8 feet in and marked by poles, extends from the western buoy to a basin, which has a depth of 8 feet, and is 300 yards in extent, situate close to the bridge. The village of Victoria has a population of about 1,500 inhabitants.

The dredge *Prince Edward* was engaged during the present year from August 19 to September 27 removing a shoal from the channel, 8,390 cubic yards, at a cost of 33.69 cents per cubic yard. Up to the present time 118,040 cubic yards sand, mud and rock have been removed from the channel and basin at (Crapaud) Victoria, at a cost of \$34,574.90, or 29.29 cents per cubic yard.

MARITIME PROVINCES DREDGES.

The Dredge 'St. Lawrence.'

At the beginning of the fiscal year 1901-2 the dredge *St. Lawrence* was operating at Sonora, St. Mary's river, Guysboro county, Nova Scotia, improving the channel there for navigation, by opening a channel across the bar at the mouth of the river to 15 feet at l.w.s.t where possible, or until rock was met. 14th.—This work was closed, and the dredge proceeded to Louisburg in Cape Breton county, Nova Scotia, where it operated from July 15 until October 9, removing a shoal in the harbour and deepening the slips at the piers of the Dominion Coal Company. At the last mentioned date the work was closed, and the dredge proceeded to Sydney, where it operated from October 10 to November 18, improving the depth of water at the loading piers of the Dominion Coal Company, and having completed the same the dredge was ordered to Pictou, Pictou county, N.S., where it was placed on the marine slip for the winter.

Hull was cleaned, scraped and given one coat of dry red lead and oil. During the winter the old hinges were removed from hopper doors and hull, and new hinges made, fitted and put on, a new upper tumbler made and put in place of one worn out. Buckets, links and pins had renewals and repairs. Boiler examined and made ready for use, engines, condenser pumps and dredge machinery examined, lost motion taken up, and renewals made where necessary.

All repairs being completed the crew was shipped, the dredge launched from the marine slip, and proceeded under orders to North Sydney, Cape Breton county, N.S., where it was engaged from April 29 to May 29, 1902, improving the depth of water in the channel in front of and at the piers of the Nova Scotia Steel and Coal Company. Some other work asked for, the dredge was unable to do, and at the last mentioned date under orders was made ready and proceeded to Port Hilford, where it was found a dangerous place for this large dredge. The dredge was now ordered to the St. Mary's river where it resumed work on June 9, and was continuing the same at the close of the fiscal year; the quantity removed during the year being 49,702 cubic yards, at a cost of 27.11 cents per cubic yard. Previous to being taken off the marine slip at Pictou, it was given two coats anticorrosive, and one coat antifouling paint.

The Dredge 'Canada.'

At the commencement of the fiscal year 1901-2, was at Yarmouth, N.S., waiting the completion of new boiler, being built, which was received, and the dredge got to work on October 23, improving the harbour channel at Yarmouth, Nova Scotia, to a depth of 16 feet l.w.s.t. which was continued until February 3, when ice making in the harbour, the dredge was laid up, the crew paid off, and all required repairs made.

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All being ready, orders were received, crew shipped, and work resumed at Yarmouth on March 27, and continued until April 26, the work closed and dredge sailed for Liverpool, Queen's county, N.S., where it arrived and worked until June 30, improving the channel through the bar to 13 feet l.w.s.t. and the work was then being continued. The quantity removed during the year was 36,090 cubic yards, at a cost of 28·30 cents per cubic yard.

The Dredge 'New Dominion.'

At the beginning of the fiscal year 1901-02, was engaged on the Salmon river, between Chipman Bridge and Briggs' Corner, Queen's county, New Brunswick, and continued there until July 24, when the water in the river fell so low it became impossible to make deposit of the spoil. The dredge was at the latter date removed to McClure's shoals, five miles down the river, where it was engaged until October 23 in opening a channel through these shoals. October 24 it resumed work towards Briggs' corner, where it continued until October 30, when work was closed and the plant removed to St. John. From November 8 to 16 work was performed for Messrs. Murray & Gregory at their mills above the falls, in St. John county. At the latter date the dredge and plant were placed in winter quarters and the crew paid off.

During the winter necessary renewals and repairs were made, and all being ready the dredge proceeded on April 3 to the Royal Kennebecasis Yacht Club's pier at Millidgeville, where it operated until the 14th while waiting to go up river, improving the depth of water on the mooring grounds; at the latter date the dredge proceeded to the Salmon river (Chipman), Queen's county, and having resumed work was continuing the same with good results at the close of the fiscal year.

During the year 95,600 cubic yards were removed, at a cost of 11·55 cents per cubic yard.

The Dredge 'Prince Edward.'

At the commencement of the fiscal year the dredge was operating on the middle ground in Summerside harbour, Prince county, P.E.I., where it continued until July 11.

At the latter date work was closed at the middle ground and the dredge removed three miles up the river to Hurd's point, where it operated from July 12 to August 9 improving the channel and the loading berths at the pier. Orders were then given to proceed to Summerside and improve the channel at Queen's wharf, which was done, and under orders the dredge then made ready and proceeded to Victoria (Crapaud), Queen's county, when after some detention it was made ready and operated from August 19 until September 27, removing a sand bar which had made in front of the wharfs.

Under orders the dredge then proceeded to Belfast, Queen's county, to perform some dredging, but on arrival it was found too dangerous a place to operate, at that time of year, and orders were given and the dredge proceeded to Murray river, where after a rough passage it arrived and work began on October 26 improving the channel and continued until December 12, when the crew were paid off and the plant placed in winter quarters. During the winter necessary renewals and repairs were made and dredging was resumed on April 25, and was being vigorously prosecuted at the close of the fiscal year. The quantity removed during the year was 51,320 cubic yards, at a cost of 31·56 cents per cubic yard.

The Dredge 'George McKenzie.'

At the close of the last fiscal year the dredge *George McKenzie* was engaged at Cribbins' Point, Antigonish county, N.S., preparing the foundation for a new pier, continuing there until July 12 it completed the work and proceeded to Cheticamp, Inverness county, N.S., where the work of deepening the entrance to 21 feet l.w.s.t., was taken up on July 13 and continued to November 12, as the weather would permit. At the latter date the work was closed and the dredge ordered to Pictou to receive a new hull. On arrival at Pictou the dredge and plant were placed in winter quarters and the crew paid off.

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Arrangements were made for building a new hull at River John, Pictou county, N.S., and at the close of the fiscal year the work was progressing well, and the old machinery will be transferred to it when ready. The quantity dredged during the first part of the fiscal year was 18,955 cubic yards, at a cost of 54.68 cents. Two tugs were required to be kept at Cribbins' Point to remove the plant to Bayfield, eight miles distant in times of stormy weather.

The Dredge 'Cape Breton'

At the beginning of the fiscal year was operating in St. John harbour in front of the deep water terminal of the I. C. Railway. The work was from July 1 to September 20, when it was completed.

At the latter date the dredge was removed to the Ox Island Shoals, St. John river, Sudbury Co., N.B., where it worked from September 21 to November 4, and completed the repiured channel.

The dredge was now removed to St. John, and after waiting some time for work the city asked to have done, and finding the work was not required, the crew was paid off, and dredge placed in winter quarters. During the winter necessary renewals and repairs were made, the hull of dredge and two steel barges cleaned and painted.

In April the dredge and plant were removed to Digby in Digby county, N.S., where it was engaged from April 23 to June 30, in improving the channel to and at the Digby Pier, and forming a basin for steamers to turn in. The work was being vigorously prosecuted at the close of the fiscal year. The quantity removed by this dredge during the year was 101,010 cubic yards at a cost of 13.50 cents per cubic yard.

The Dredge 'New Brunswick'

Commencing the fiscal year, was working at French lake, Sunbury county, N.B., and by July 4, commenced the work of depening a channel from the Oromocto river into the lake. It then proceeded to Springhill, York county, N.B., and resumed work there from July 5 until August 19. The water in the river having fallen so low, it became impossible to make deposit of spoil, the dredge was removed to Fredericton, and from August 20 to September 25, was engaged in deepening the channel in front of the city wharfs.

The dredge operated from September 26 to November 5, improving the river channel near the Douglas Booms in York county, and on completing there, the dredge operated November 6 and 7, at the Canada Eastern Railway wharfs, removing silt and sawdust which had lodged there. Ice now making in the river, the dredge and plant removed to St. John, and was placed in winter quarters, the crew being paid off.

During the winter necessary renewals and repairs were made, and all being ready the dredge was ordered to resume work at Springhill in York county which was done; work commencing April 11, was vigorously pushed at the close of the fiscal year. There was removed by this dredge during the year 53,005 cubic yards at a cost of 16.99 cents per cubic yard.

The Steam Launch 'Cricket'

Gave good service during the year in attending the dredge *New Brunswick*, doing all the towing required in the removal of barges with spoil to place of deposit.

MEMORANDUM of quantities removed by the several dredges in the Maritime Provinces during the fiscal Year 1901-2.

	Cubic yards.
St. Lawrence	49,702
Canada	36,090
New Dominion	95,600
Prince Edward	51,320
Geo. McKenzie	18,966
Cape Breton	101,010
New Brunswick	53,005
Total	405,682

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DETAILS OF DREDGING IN THE MARITIME PROVINCES.

For the Fiscal Year ending June 30, 1902.

Dredge.	Locality.	Date.	Time Dredging.		Quantity Cubic Yards.	Expenditure at locality.	Per Cubic Yard for Local Expenditure.	Wintering, Repairs, Equipment and Superintendence, <i>pro rata</i> .	Total Cost.	Per Cubic Yard for Total Expenditure.
			Hrs.	Min.		\$	cts.	\$	cts.	
St. Lawrence...	Sonora, St. Mary's River, Guysboro Co., N.S.....	July 1 to 14, 1901, and June 9 to June 30, 1902.....	87	50	8,925	1,304 44	0 14·61	1,445 55	2,749 99	0 30·81
	Dominion Coal Co., Louisburg, C.B....	July 15 to October 9, 1901.....	288	55	22,310	2,599 65	0 11·65	2,880 87	5,480 52	0 24·56
	Dominion Coal Co., Sydney, N.S.....	October 10 to Nov. 18, 1901.....	33	45	8,317	1,481 54	0 17·81	1,641 80	3,123 34	0 37·56
	Nova Scotia Steel and Coal Co, North Sydney.....	April 29 to May 29, 1902.....	61	50	10,150	1,007 54	0 09·92	1,116 52	2,124 06	0 20·92
Canada.	Yarmouth, Yarmouth Co., N.S. . . .	October 26, 1901, to Feb. 3, and March 27 to April 26, 1902...	268	05	26,190	2,763 11	0 10·55	3,200 02	5,963 13	0 22·77
	Liverpool, Queen's Co., N.S.	April 27 to June 30, 1902	152	55	9,900	1,971 00	0 19·91	2,282 65	4,253 65	0 42·96
	Between Chipman & Briggs Corners, Salmon River, Queen's Co., N.B. . . .	July 1 to 24, and Oct. 24 to 30, 1901, April 15 to June 30, 1902	756	30	50,375	4,360 83	0 08·65	1,284 69	5,645 52	0 11·20
New Dominion.	McClure Shoals, Salmon River, Queen's Co., N.B.	July 25 to Oct. 23, 1901.....	676	00	39,525	3,519 75	0 08·90	1,036 91	4,556 66	0 11·52
	Murray & Gregory's, St. John Co., N.B. Royal Kennebecasis Yacht Club, St. John Co., N.B.	Nov. 8 to 16, 1901.....	58	00	3,675	*185 20	0 05·03	54 56	239 76	0 06·52
	Summerside, Prince Co., P.E.I.	April 3 to 14, 1902.....	77	00	2,025	466 84	0 23·05	137 53	604 37	0 29·84
	Hurds Point Wharf, Prince Co., P.E.I. Victoria, Crapaud, Queen's Co., P.E.I. Murray River, King's Co., P.E.I. . . .	July 1 to 11, Aug. 10 to 12, 1901 July 12 to Aug. 9, 1901..... Aug. 19 to Sept. 27, 1901..... Oct. 26 to Dec. 12, 1901, and April 25 to June 30, 1902.....	66 126 243 712	30 30 00 00	2,610 6,210 8,390 34,110	693 34 1,226 04 1,443 23 4,906 49	0 26·56 0 19·74 0 17·20 0 14·88	664 72 1,175 44 1,383 68 4,704 01	1,358 06 2,401 48 2,826 91 9,610 50	0 52·03 0 38·67 0 33·69 0 25·31
Geo. McKenzie.	Cribbin's Point, Antigonish Co., N.S. Cheticamp, Inverness Co., N.S. . . .	July 1 to 12, 1901..... July 13 to Nov. 12, 1901. . .	56 406	00 00	1,810 17,145	534 24 6,842 01	0 29·51 0 39·90	216 46 2,772 21	750 70 9,614 22	0 41·47 0 56·13
	I. C. Ry. terminus, St. John, St. John Co., N.B.	July 2 to Sept. 20, 1901.	111	30	22,155	2,297 73	0 10·37	1,441 26	3,738 99	0 16·88

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New Brunswick.	Ox Island, Sunbury Co., N.B.....	Sept. 21 to Nov. 4, 1901.....	234 15	47,460	2,897 63	0 06·10	1,817 56	4,715 19	0 09·93
	Digby, Digby Co., N.S.	April 23 to June 30, 1902	159 30	31,395	3,188 03	0 10·15	1,999 71	5,187 74	0 16·52
	French Lake, Sunbury Co., N.B.	July 1 to 4, 1901	27 00	990	89 46	0 09·03	41 84	131 30	0 13·26
	Springhill, York Co., N.B.....	July 5 to Aug. 19, 1901, and April 11 to June 30, 1902....	824 00	25,765	3,584 91	0 13·91	1,676 51	5,261 42	0 20·42
	Fredericton, York Co., N.B.....	Aug. 20 to Sept. 25, 1901.....	282 00	11,295	1,381 61	0 12·23	646 12	2,027 73	0 17·95
	Douglas Booms, York Co., N.B.....	Sept. 26 to Nov. 5, 1901.....	323 00	14,235	1,030 81	0 07·24	482 06	1,512 87	0 10·62
	Canada Eastern Ry., York Co., N.B..	Nov. 6 and 7, 1901.....	18 00	720	51 21	0 07·11	23 95	75 16	0 10·43
			6050 05	405,682	49,826 64	0 12·28	34,126 63	83,953 27	0 20·69

* Tug hire not included, not provided by the Department.

STATEMENT of dredging in the Maritime Provinces, showing quantities removed by and expenditure of each Dredge during the thirty years ended June 30, 1902.

Dredge.	Total quantities and cost for twenty-nine Years, ending June 30, 1901.				1901-02.			Total for thirty Years ended June 30, 1902.	
	Total Quantity.	Cost.	Per cubic yard.	Quantity. c. yds.	Cost. \$ cts.	Per cubic yard. \$ cts.	Total Quantity. c. yds.	Total cost. \$ cts.	Cost per cubic yard. \$ cts.
	c. yds.	\$ cts.	\$ cts.						
St. Lawrence.....	1,368,001	363,792 79	0 26·59	49,702	13,477 91	0 27·11	1,417,703	377,270 70	0 26·61
Canada.....	895,384	282,128 66	0 31·50	36,090	10,216 78	0 28·30	931,474	292,345 44	0 31·38
New Dominion.....	1,379,080	248,600 79	0 18·00	95,600	11,046 31	0 11·55	1,474,680	259,647 10	0 17·60
Prince Edward.....	1,192,648	301,932 82	0 25·33	51,320	16,196 95	0 31·56	1,243,968	318,129 77	0 25·57
(Old) Cape Breton.....	534,938	139,074 33	0 25·99	.....	.....	.....	534,938	139,074 33	0 25·99
Geo. McKenzie.....	662,360	267,540 34	0 40·39	18,955	10,364 92	0 54·68	681,315	277,905 26	0 40·78
Cape Breton.....	361,785	58,534 18	0 16·17	101,010	13,641 92	0 13·50	462,795	72,176 10	0 15·59
New Brunswick.....	71,395	21,319 30	0 29·86	53,005	9,008 48	0 16·99	124,400	30,327 78	0 24·37
	6,465,591	1,682,923 21	0 26·02	405,682	83,953 27	0 20·69	6,871,273	1,766,876 48	0 25·71

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STATEMENT of dredging performed by hand in the Maritime Provinces, showing quantities removed and expenditure at each locality for the thirty years ended June 30, 1902.

Locality.	Total quantity and cost for twenty-nine Years ending June 30, 1901.			1901-02.			Total quantity and cost for thirty years ending June 30, 1902.		
	Total Quantity.	Cost.	Per cubic yard.	Quantity.	Cost.	Per cubic yard.	Total Quantity.	Total Cost.	Cost per Cubic yard.
	c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.	c. yds.	\$ cts.	\$ cts.
Parrsboro, N.S.....	42,595	12,804 68	0 30·06	nil.	nil.	nil.	42,595	12,804 68	0 30·06
Windsor	5,450	1,627 60	0 29·86	"	"	"	5,450	1,627 60	0 29·86
Milton	663	499 46	0 75·33	"	"	"	663	499 46	0 75·33
	48,708	14,931 74	0 30·65	nil.	nil.	nil.	48,708	14,931 74	0 30·65

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PROVINCE OF QUEBEC.

RIVER ST. LAWRENCE SHIP CHANNEL.

The distance between Montreal and Quebec by the river St. Lawrence Ship Channel is 160 miles. Of this distance about 65 per cent is natural deep water not requiring improvement.

From Montreal to Three Rivers, 82 miles, the tide is not appreciable.

Three Rivers to Batiscan, 20 miles, the tide can always be felt, but owing to uncertainty of time and height, it cannot be depended on for navigation,

Batiscan to Portneuf, 22 miles, during 6 hours out of every 12, half-tide giving an additional depth of from $1\frac{1}{2}$ to 4 feet, may be taken advantage of.

Portneuf to Quebec, 36 miles, there is a tide of from 9 to 15 feet giving tidal navigation for about 9 hours out of every 12.

The water in the river has great annual fluctuation. The average height above ordinary low water is for May, $6\frac{1}{2}$ ft.; June, $4\frac{1}{3}$ ft.; July, $3\frac{3}{4}$ ft.; August, $1\frac{3}{4}$ ft.; September, 1 ft.; October, $\frac{1}{3}$ ft.; November, $\frac{3}{4}$ ft.

The total fall in water level, in the river at ordinary low water, between Montreal and Quebec is about 29 feet.

From Montreal to Three Rivers, 11 ft.; Three Rivers to Batiscan, $3\frac{1}{2}$ ft.; Batiscan to Portneuf, $10\frac{1}{2}$ ft., and from Portneuf to Quebec, 4 ft.

The current varies throughout. It is strongest at St. Mary's Current in Montreal harbour, at Cap à la Roche and at the Richelieu rapids. It is quite gentle in Lake St. Peter.

The general average velocity is about $2\frac{1}{2}$ miles per hour.

The general direction of the river being northerly, the season is shortened by the fact that the last ice to yield is nearest the outlet.

Before the commencement of dredging operations, in 1844, the depth on the flats of Lake St. Peter was about 11 feet at ordinary low water of autumn of that time.

In 1888 the channel from Montreal to Cap à la Roche was completed to $27\frac{1}{2}$ feet at ordinary low water, and at Cap à la Roche and Cap Charles, where most of the material to be removed was rock, the depth was $27\frac{1}{2}$ feet at half tide. From Cap Charles to Quebec it was suspected that there were shoal places, but nothing definite was known.

At that time the tonnage tax having been found to militate against the interests of trade on the St. Lawrence route, an Act was passed relieving the Montreal Harbour Commissioners of their indebtedness, with respect to the River St. Lawrence Ship Channel, and transferring the work, the plant, &c., to the Government; the channel to be continued and completed as a public work.

Under the Public Works Department, from 1888 until 1898 the work begun by the Harbour Commissioners was continued.

The difficult rock work at Cap à la Roche and Cap Charles, was completed as designed.

Almost all of the dredged portions of the river, except the channel in Lake St. Peter, were cleaned up or deepened, and many curves and narrow places were widened.

Surveys were made, and between Cap Charles and Quebec, to avoid the necessity of waiting for the tide, channels were dredged through several shoals.

The extraordinary low water of 1895 and 1897, and the increase in the size of vessels, urgently called for a wider and deeper channel.

In 1897 it was decided to construct new plant consisting of large and powerful dredges, tugs, barges, &c., suitable for channel improvement on a large scale.

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In 1899 the dredging plant was in a position to warrant the commencement of a more extensive plan of operations; and as two new dredges of large type, with tugs and plant had proved their efficiency; two powerful steel dredges designed according to the best practice and experience in this identical work, with tugs, &c., were almost completed and two more, to complete the six required, were authorized.

With this dredging fleet, and the necessary repair shops and ship yard at Sorel available, and having in view the faults of the old channel, the type of steamships using it, and the necessity of work capable of immediate utility, the question of type of channel to give the best results was carefully considered.

The low water of 1897, the lowest on record, except the short period of extraordinary low water of 1895, was adopted as the plain of river level at which the improved channel would be made 30 feet in depth.

It was likewise decided to make the channel as wide as could be dredged in one cut, viz., 450 feet.

The project then decided on was to realize, in the shortest possible time, a channel 450 feet wide and 30 feet deep at the extreme low water level of 1897, from the eastern limit of Montreal harbour to available tide water at Batiscan.

Between Longue Point, the eastern limit of Montreal harbour, and tide water at Batiscan, in a distance of about 100 miles, the length of channel requiring improvement is estimated at 50 miles and between Batiseau and Quebec, 10 miles.

At the date of writing, at the end of the season of 1902, the total length completed to a minimum width of 450 feet is 22.2 miles, or 28.2 miles by including 6 miles of channel in Lake St. Peter, deepened to 30 feet, but not widened.

During 1903 it is expected that between Sorel anchorage and Montreal harbour, the channel will all be completed, marked, and opened for navigation day and night.

In 1904 before low water period, it is hoped that by taking advantage of the tide up to Batiscan, vessels of 30 feet draught may safely navigate between Quebec and Montreal, at lowest water.

In the improvements being carried on, the channel is not only being widened and deepened, but in many places it is being straightened.

The improved channel is being constructed with special reference to safety and facility of navigation.

With good permanent range lights at both ends of long tangents, with the channel nine times wider than the broadest vessel, with curves of 3 miles diameter, and a few gas buoys at bends, isolated points and anchorages, day navigation should be safe, as well as night navigation for all inward bound and light draught vessels.

The weather on the St. Lawrence between Montreal and Quebec, is remarkably favourable for navigation.

Fogs are most infrequent and of short duration.

Smoke rarely affects day navigation.

Snowstorms only last 24 hours at the longest, when a ship should anchor and wait for fine weather. As the permanent aids to navigation are established, in fine weather navigation would be safe without any buoys and the anxious rush to get the last vessel off before the buoys are removed would be obviated.

Winter navigation will come in due time, but in the meantime a season of 8 months, April 1 to December 1, should be established.

The month of April with its long clear days is one of the finest of the season for navigation.

Elevators and permanent sheds will soon be prepared to supply and receive April cargoes in both Quebec and Montreal.

A few of the government tugs could be armed for the purpose of breaking up and starting the ice early in the spring, and for convoying vessels down during the bad weather late in November.

The pilotage system comes in for a great deal of criticism.

It has undoubted weak points, but the most serious accidents in 1902 were below the pilotage districts when the vessels were navigated by their own officers.

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The pilots between Montreal and Quebec are to be congratulated on the record for 1902.

They are as a rule skilful men, they know the river and are gifted with the voyageur instinct, but it is not instinct that is required to pilot a 12,000 ton ship safely for 12 hours when two minutes carelessness will put her ashore.

It requires a man of calibre to command, to assume the responsibility of taking charge of a half million dollar ship and who knows how to handle her.

The extreme low water of 1897, at which level the new channel will give a depth of 30 feet, is nearly 1½ feet lower than the ordinary low water when there is 27½ feet in the present ship channel.

The depth of the new channel will, therefore, be almost 4 feet deeper than the channel now in use.

The following table gives the averages and the greatest and least depths in the 27½ ft. channel, during the navigation season of each year, from 1890 to date :—

Year.	Average depth for each month.							From Sorel gauge. During each year, (May to Nov.)	
	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Highest.	Lowest.
	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
1890.....	35 6	35 3	31 9	30 6	30 9	29 9	30 6	37 0	29 0
1891.....	34 6	31 3	29 9	29 9	30 0	28 3	28 3	36 9	27 3
1892.....	31 0	31 9	31 6	30 6	28 9	28 3	28 3	33 6	27 3
1893.....	36 0	34 3	30 9	29 9	29 6	28 6	28 0	37 6	27 6
1894.....	34 6	31 9	31 0	29 0	28 3	28 9	29 0	36 0	27 7
1895.....	33 3	31 3	28 3	28 3	27 6	26 0	26 9	34 6	25 10
1896.....	33 6	30 6	28 9	28 0	27 6	27 9	29 0	37 0	27 4
1897.....	35 6	32 6	30 3	29 3	28 0	27 0	27 6	37 0	26 5
1898.....	31 6	30 9	29 8	28 6	28 2	28 3	28 6	32 1	26 9
1899.....	36 0	31 9	30 3	28 6	27 6	28 0	27 9	37 9	26 9
1900.....	33 6	30 9	30 6	29 6	28 1	28 9	29 2	35 9	27 4
1901.....	34 3	31 10	29 2	28 3	27 7	27 4	27 3	36 3	26 6
1902.....	33 2	32 2	32 2	29 4	28 1	28 1	29 0	34 1	27 6

The depth in the 30 ft. channel this year, owing for the most part to the abundant rainfall, has not been less than 31½ feet ; while in the old channel the least depth was not less than 27½ feet.

During the dredging operations every effort is made to dump the dredged material so as to check cross currents and to prevent local lowing of the water level.

The whole of the dredged or doubtful portions of the ship channel, between Long Pointe, the eastern limit of Montreal harbour, and Quebec, were thoroughly tested and examined during the season of 1902, as has been done yearly since 1898.

No boulders nor obstructions of a dangerous character were found.

During the supervision of the dredging, the testing and other work, according to special orders from the Hon. the Minister, the officers of the department report the displacement of any buoys, take every precaution and when necessary use the government plant for the assistance and safety of navigation.

The details of dredging done during the fiscal year 1901-02, will be found in the appended table.

The quantity amounted to 3,098,350 cubic yards as against 2,479,385 for the previous year.

The total quantity dredged during the season of navigation of 1902, with the new hydraulic dredge *J. Israel Tarte* in successful operation for four months, amounted to 5,712,710 cubic yards.

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The following is a comparative statement of the dredging operations between Montreal and Quebec from 1896 to date :—

Fiscal Year.	Nature of Work.	Cubic Yards
1895-1896...	Widening, straightening and deepening, three old dredges and <i>Laval</i>	437,642
1896-1897...	" " "	330,207
1897-1898...	Three old dredges, <i>Laval</i> and <i>Laurier</i>	625,488
1898-1899...	" " "	474,753
1899-1900...	Thirty-foot channel, two old dredges, <i>Laval</i> , <i>Laurier</i> and <i>Lady Aberdeen</i>	1,107,894
1900-1901...	Two old dredges, <i>Laval</i> , <i>Laurier</i> , <i>Lady Aberdeen</i> and <i>Lady Minto</i>	2,479,385
1901-1902...	One old dredge, <i>Laval</i> , <i>Laurier</i> , <i>Lady Aberdeen</i> , <i>Lady Minto</i> and <i>Lafontaine</i> ..	3,098,350
1902, July to end of sea- son.	<i>Laval</i> , <i>Laurier</i> , <i>Lady Aberdeen</i> , <i>Lady Minto</i> , <i>Lafontaine</i> , <i>Baldwin</i> and <i>J. Israel Tarte</i>	4,580,500

Present capacity of plant 1,000,000 cubic yards per month or 6,000,000 per annum.

DREDGING operations completed, 30-foot channel, to end of season 1902.

Locality.	Description of Work.	Width.	Depth.	Length of Channel completed.
		Feet.	Ft. In.	Miles.
Pointe aux Trembles (en haut)	Widening and deepening.....	450 to 650	30 0	2·85
Ile Ste. Thérèse.....	" "	450	30 0	0·40
Varennés to Cap St. Michel..	" "	450 to 500	30 0	3·00
Cap St. Michel to Verchères..	Straightening, widening and deep- ening	450	30 0	4·50
Verchères Traverse.....	" "	450	30 0	1·10
Verchères to Contrecoeur.....	" "	450	30 0	1·70
Contrecoeur Channel.....	Widening and deepening.....	450	30 0	4·05
Ile de Grace Channel.....	Straightening, widening and deep- ening	450	30 0	2·10
Stone Island.....	Widening and deepening.....	450	30 0	1 10
Lake St. Peter.....	Deepening.....	325	30 0	6 00
			(Not widened).	
Three Rivers	Straightening, widening and deep- ening	600	30 0	0·50
Champlain and Pointe Ci- trouille.....	Cleaning up small sand bars.....	300	27 6	
				27·30
Lotbinière.....	Completion of new channel.....	500	30 0	0·40
Cap Santé... ..	" "	500	30 0	0·20
Ste. Croix Bar.....	Completion, ½ width, new channel..	500	30 0	0·30
				28·20

Total length of dredging completed between Montreal harbour and
Batiscan, to end of season 1902 27·3 miles.
Estimated length requiring dredging..... 50·0 "
" " to Quebec..... 60·0 "

* NOTE.—The low water level of 1897 is the datum to which the dredging is being done to 30 feet. This level being 1·4 feet lower than the ‘ordinary low water’ when there is 27½ feet in the ship channel, the channel being dredged will therefore be nearly 4 feet deeper than the channel now in use.

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PLANT COMPLETED AND PUT IN OPERATION DURING FISCAL YEAR 1901-2.

Elevator dredge *Baldwin*, built at Sorel. Wooden hull, $1\frac{1}{4}$ yard extra heavy buckets. Greatest working depth, $42\frac{1}{2}$ feet. Length, 175 feet. Breadth, 32 ft. Depth, 15 feet. Capacity per day of 20 hours, 4,000 to 6,000 cubic yards.

Two dumper scows—capacity, 300 cubic yards each.

Hydraulic dredge *J. Israel Tarte*, built at the Polson Iron Works, Toronto. Steel hull, and 1,700 feet of 3 feet steel discharge, pipe floated by steel pontoons. Capacity, 20,000 to 30,000 cubic yards per day of 24 hours.

Coal barge *No. 3*. Wooden hull. Capacity, 350 tons.

Steamer *De Levis*, built at Sorel. Wooden hull, twin screw. Survey steamer to replace *John Pratt*.

PLANT UNDER CONSTRUCTION AT SOREL.

Sea-going dredge. Steel ship. Combined hydraulic-elevator-hopper dredge, for maritime provinces or Lower St. Lawrence. To be completed in 1903.

Stone lifter No. 3, 1902. Almost completed. Wooden hull.

Dipper dredge, 1902. Nearly completed. Composite.

Two scows, small size, for dipper dredge.

Two dumper scows (spare), capacity 300 cubic yards each.

Shipyard shops.—The shipyard and shops with electrical equipment, wharfs, slips, offices, stores, have been all rebuilt, and are complete for dredge building and repairs. A marine railway is under consideration.

Plant taken out of commission and broken up.—Elevator dredge No. 8, built in 1874.

Plant now in operation constructed prior to 1896.—Capacity per day, 1,000 to 2,000 cubic yards.

Plant now in operation constructed since 1896.—Capacity per day, 38,000 to 58,000 cubic yards.

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ESTIMATE, 30-foot Channel, December, 1902—Montreal Harbour to Quebec.

Locality.	Length of Dredging.		Cubic Yards.	
	Required.	Done.	Required.	Done.
Division 1.				
Pointe aux Trembles (en haut).....	2·20	2·85	1,000,000	
Isle Ste. Thérèse.		0·40		
Varennes to Cap St. Michel.....		3·00		
Cap. St. Michael to Verchères..		4·50		
Verchères Traverse.....		1·10		
Verchères to Contrecoeur.		1·70		
Contrecoeur Channel.....	2·00	4·05	1,000,000	
Total.....	4·20	17·60	2,000,000	
Division 2.				
Ile de Grâce Channel.....	2·30	2·10	1,000,000	
Stone Island.....		1·10		
Isle au Raisin.....	0·25		40,000	
Lake St. Peter. (See 3.).....				
Port St. Francis.....	0·50		300,000	
Three Rivers.....		0·50		
Cap Madeline to Becancour	1·55		420,000	
Champlain to Pt. Citrouille.....	1·30		290,000	
Batture Perron.....	0·60		450,000	
Total.	6·50	3·70	2,500,000	
Division 3.				
Lake St. Peter	12·00	5·00 (Not widened.)	16,400,000	2,600,000
Division 4.				
Batiscan to Cap Levrant.....	3·00		1,300,000	
Cap à la Roche Channel.....	2·00		1,200,000	
Pouiller Rayer.....	1·20		500,000	
Cap Charles.....	0·90		500,000	
Grondines.....	0·80		200,000	
Lotbinière.....		0·40		
Cap Santé.		0·20		
Ste. Croix.....	0·60	0·30	150,000	
St. Augustin.....	0·60		150,000	
Total.	9·10	0·90	4,000,000	

RECAPITULATION.

Division 1— Montreal harbour to Sorel anchorage.....	4·20	17·60	2,000,000	
Division 2— Sorel anchorage to Batiscan.....	6·50	3·70	2,500,000	
Division 3— Lake St. Peter.....	12·00	6·00 (Not widened.)	16,400,000	2,600,000
Division 4— Batiscan to Quebec	9·10	0·90	4,000,000	
Totals.....	31·80	28·20	24,900,000	
	60 miles.			

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The standard of steady work is, when the dredging machinery is in actual motion, 75 per cent of the possible working time.

The dredge *Lady Aberdeen* again made the record for the fiscal year. Under Captain Louis Dauphinas in 1901, and Captain Narcisse Dauphinas in 1902, the dredge worked $77\frac{1}{2}$ per cent of the possible working time, and averaged for the 187 working days 4,636 cubic yards per day.

The new elevator dredge *Baldwin* was completed and put in operation just at the end of the fiscal year.

She is the best developed elevator type of channel excavator.

The new hydraulic dredge *J. Israel Tarte* was put in operation in June, 1902.

The work for the month was on trial, and to find the best system of working.

The actual quantity removed during the first month was only 93,750 cubic yards. *But during the month of October, 1902, the same dredge removed 600,000 cubic yards, which is understood to have beaten the world's record.*

The semaphore constructed by the Public Works Department in 1898 and operated, since that date, for showing the depth in the Cap à la Roche channel, was taken over for operation by the Department of Marine and Fisheries.

The depth over the St. Augustin bar was shown by a semaphore at St. Nicholas, erected and operated also by the Department of Marine and Fisheries.

The gauges for these semaphores were placed by the officers of this department.

It will be seen from the above that the 30-foot channel is already in sight and the way prepared to accommodate shipping suitable for the ameliorated channel and improved harbour facilities in Montreal.

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PUBLIC WORKS OF CANADA.

RIVER ST. LAWRENCE SHIP CHANNEL.

Abstract of work of Dredging Fleet during the fiscal year ended June 30, 1902.

Dredge.	Locality of Dredging	Time of Service. Days.	Nominal Working Time. per 20 hrs. per Day. Hours.	Hours Actual Dredging.	Number of Scows filled.	Number of Cubic yards Dredged. Scow Measurement.	Depth of dredging at low water of 1897.	Width. Feet.	Character of Soil.	Remarks.
"Lady Aberdeen"	Lake St. Peter—									
	White Buoy Curve.....	23	440	302½	752	150,400	30'0"	350	Soft clay.....	
	Above Lightship No. 2....	18	345	223½	483	96,600	30'0"	325	Soft clay.....	
	Contrecoeur Channel—									
"Lady Minto"	St. Ours Traverse.....	80	1,465	1,178	1,790	354,250	30'0"	450	Clay, sand and stones	
	Petite Traverse.....	66	1,185	954¼	1,329	265,800	30'0"	450	Blue clay.....	
		187	3,435	2,658½	.....	867,050				
"No. 8"	Verchères to Cap St. Michel.	39	735	593¼	1,081¾	216,400	30'0"	450	Hard blue clay.....	
	Contrecoeur—									
	Traverse.....	82	1,510	1,027	1,207	222,425	30'0"	450	Hard clay and stones.	
	Petite Traverse.....	68	1,205	950¼	.....	209,820	30'0"	450	Blue clay and stones.	
"Laurier"		189	3,450	2,570½	.....	648,645				
	Ile aux Vaches Traverse.....	28	280	218½	246	36,900	30'0"	600	Clay and stones.....	
	Pointe Citrouille.....	38	380	275¼	161	22,080	27'6"	300	Sand.....	
"No. 8"	Champlain.....	10	100	67½	29½	22,655	27'6"	300	Sand.....	
	Cap St. Michel Curve.....	47	470	308	209	27,990	30'0"	450	Hard clay.....	Dredge broken up Nov., 1901.
		123	1,230	869¼	645½	89,625				
"Laurier"	Verchères to Cap St. Michel	5	95	68¼	74	15,540	30'0"	450	Blue clay.....	
	Verchères Traverse.....	42	805	436½	543	118,940	30'0"	450	Clay, sand and stones	
	Ile aux Vaches Traverse ..	129	2,390	1,523	2,271	476,910	30'0"	500	Blue clay.....	
		176	3,290	2,027¾	2,888	611,390				

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"Laval" ...	Contrecœur to Verchères...	59	1,140	831 $\frac{3}{4}$	894 $\frac{2}{3}$	133,200	30'0"	450	Blue clay and stones.	Day work. New dredge Aug., 1900.
	Ile Ste. Thérèse.....	14	260	103	37 $\frac{2}{3}$	5,650	30'0"	450	Clay and boulders...	
	Pointe aux Trembles (en haut).....	102	1,800	1,190 $\frac{1}{4}$	1,138 $\frac{2}{3}$	171,390	30'0"	450	Shale rock, clay and stones	
		175	3,200	2,125	2,071	310,240				
"Lafon- taine"	Contrecœur— Channel.	79	790	503	1,105	181,100	30'0"	450	Stiff clay.	New hydraulic dredge on trial.
	Petite Traverse.....	68	1,205	816 $\frac{1}{2}$	987 $\frac{1}{2}$	296,250	30'0"	450	Stiff blue clay.....	
		147	1,995	1,319 $\frac{1}{2}$	2,092 $\frac{1}{2}$	477,350				
		27	...	...	.....	93,750	30'0"	325	Soft blue clay.....
"J. Israel Tarte"	Lake St. Peter— Above Lightship No. 2....									New dredge on trial.
"Baldwin"	Pointe aux Trembles (en haut).....	1	10	8	2	300	30'0"	450	Blue clay and stones.	
						3,098,350				

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DREDGING SHIP CHANNEL, River St. Lawrence between Montreal and Quebec, Classification of Disbursements for Fiscal Year ended June 30, 1902.

Vessels.	Fuel.	Wages.	Board.	Supplies.	Main- tenance and Repairs.	Expenditure on New Plant and Ship Yard Improvement.	Proportion of General Maintenance, Expenditure, &c.	Total Expenditure for each Vessel.	Total Expenditure for each Service.	Stone Lifter Ser- vice.	Tug Service.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Dredge Lady Aberdeen.....	3,682 62	5,636 56	2,300 44	1,751 13	4,841 14	.....	1,530 78	19,742 67	.....	.....	8,159 40
"
"
"
Dredge Lady Minto.....	3,476 00	5,619 10	2,256 43	1,746 69	3,267 36	.....	1,375 59	17,741 17	.....	.....	7,220 46
"
"
Dredge Laurier	3,944 00	5,465 96	2,150 02	1,752 21	11,382 01	.....	2,075 64	26,769 84	.....	.....	7,817 15
"
"
"
Dredge Laval.....	3,584 37	5,056 60	1,967 19	2,662 17	3,477 15	.....	1,407 69	18,155 17	.....	.....	7,761 01
"
"
"
Dredge Lafontaine	1,948 62	3,532 90	1,362 15	1,134 70	2,600 66	.....	889 21	11,468 24	.....	.....	5,515 17
"
Dredge No. 8.....	1,967 75	2,060 38	821 49	155 49	102 04	.....	435 60	5,542 75	.....	.....	1,701 04
"
"
"
Dredge Baldwin	42 50	259 26	.....	798 10	.....	.....	92 44	1,192 30	.....	.....	.....
Dredge J. Israel Tarte	858 50	1,598 11	493 25	859 78	2,480 86	.....	528 74	6,819 24	.....	.....	{ 1,041 36
Spoon Dredge No. 6.....	1,088 85	2,952 78	.....	346 31	256 44	.....	390 37	5,034 75	.....	.....	620 05
Tug Cartier	1,709 62	3,344 83	1,322 89	507 93	641 48	.....	632 65	8,159 40	.....	.....	.....
Tug Champlain	1,283 49	3,032 74	1,175 27	629 93	539 18	.....	559 85	7,220 46	.....	.....	.....
Tug St. Francis.....	1,060 24	2,083 34	721 03	408 65	814 29	.....	427 62	5,515 17	.....	.....	.....
Tug St. Jean Ilerveille.....	1,910 36	3,047 91	1,325 41	539 95	335 62	.....	601 76	7,761 01	.....	.....	.....
Tug Emilia	1,144 74	3,010 48	1,134 03	833 61	588 18	.....	606 11	7,817 15	.....	.....	.....
Tug Lac St. Pierre	1,368 50	2,367 88	1,141 45	952 59	900 38	565 74	7,296 54	6,255 18
Tug Jessie Hume	890 86	1,897 13	209 82	346 57	659 41	336 54	4,340 33

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Tug Minnie F. Parsons.....	301 74	690 05	484 26	78 60	14 50	131 89	1,701 04	3,478 62
Str. Lord Stanley.....	212 50	611 11	358 25	2,027 04	269 72	3,478 62	14,376 74
Str. Frontenac.....	2,413 49	3,815 85	2,012 10	2,930 28	2,090 30	.....	.....	1,114 72	14,376 74	.....	.....	.....	8,312 40
Str. Eureka.....	2,006 00	2,736 41	1,709 47	864 17	351 83	.....	.....	644 52	8,312 40	.....	.....	.....	1,000 51
Str. DeLevis.....	68 00	246 83	.....	608 10	.....	.....	.....	77 58	1,000 51	.....	.....	.....	5,762 81
Str. John Pratt	1,482 25	2,185 66	223 51	823 49	601 08	.....	.....	446 82	5,762 81	.....	.....	.....	2,019 56
Stone Lifter No. 2	80 75	395 83	48 17	10 02	1,328 20	.....	.....	156 59	2,019 56	.....	.....	.....	.....
Miscellaneous new buildings.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rebuilding wharfs.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tools and machinery.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dredge J. I. Tarte.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dredge Lafontaine.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dredge Baldwin.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Str. Frontenac.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tug No. 5 Champlain.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tug No. 6 Lac St. Pierre.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tug No. 7 DeLevis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tug No. 8 James Howden.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tug No. 9.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Five dump scows, 300 c. y.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Two dump scows, 75 c. y.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
One winch scow.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tug Annette (St. Maurice).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coal barge No. 3.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stone lifter No. 3.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Purchase of railway wharf.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Increase fuel stock.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Increase stores, &c.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hydrographic survey.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Survey north channel.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	37,025 75	61,647 70	22,858 38	21,098 72	39,299 15	477,114 62	15,298 17	197,227 87	197,227 87	2,019 56	82,742 18

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Str. Eureka.....	1,000 51	156,032 05	1,025	1,184½	195,208 31	3,098,350	
Str. DeLevis.....	5,762 81						
Str. John Pratt.....							
Stone Lifter No. 2.....							
Miscellaneous new buildings.....							
Rebuilding wharfs.....							
Tools and machinery.....							
Dredge J. I. Tarte.....							
Dredge Lafontaine.....							
Dredge Baldwin.....							
Str. Frontenac.....							
Tug No. 5 Champlain.....							
Tug No. 6 Lac St. Pierre.....							
Tug No. 7 DeLevis.....							
Tug No. 8 James Howden.....							
Tug No. 9.....							
Five dump scows, 300 c. y.....							
Two dump scows, 75 c. y.....							
One Winch scow.....							
Tug Annette (St. Maurice).....							
Coal barge No. 3.....							
Stone lifter No. 3.....							
Purchase of railway wharf.....							
Increase fuel stock.....							
Increase stores, &c.....							
Hydrographic survey.....	30,173 06						
Survey north channel.....	3,027 60						
Totals.....	46,219 16						

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PROVINCE OF QUEBEC.

DREDGING AT THE BLANCHE SHOALS.

Dredge *T. F. M. No. 1*. commenced operations at this place on September 12, and worked there up to October 26, 1901, removing 21,325 cubic yards of sand.

These shoals are deemed the most dangerous portion of the Ottawa river and would require at least six months dredging to complete the channel through them.

DREDGING AT CHATEAUGUAY BASIN.

On May 12, 1902, dredging was resumed on the Chateauguay river, deepening and widening the channel, between the basin and the mouth of the river.

The material removed consisted of 7,800 cubic yards of clay, hardpan and boulders. A full season's work is yet required at this place to complete the channel.

DREDGING AT COTEAU LANDING.

Dredge *No. 4, MacDonald*, worked at this place between October 26 and November 11, 1901, continuing the deepening of the channel from the elevator dock to the entrance of the Soulanges canal.

On April 29, 1902, dredging was resumed on this channel and continued to June 30, the close of the fiscal year.

The total quantity of material removed at this place was 36,750 cubic yards of clay and boulders.

This work was performed under contract by cubic yard.

DREDGING AT DORVAL.

Between May 10, and June 25, 1902, dredging operations were performed at this place, by the dredge *No. 4, Moore*, on the channel leading to the Royal Yacht Club's wharf. This channel was dredged to a depth of 10 feet at low water, and 20,280 cubic yards of clay and sand were removed.

DREDGING AT GRAHAM.

Between July 1, 1901 and August 17, the dredge *No. 4, Moore*, worked at this place making an approach to the wharf, to enable freight vessels to enter from the main channel.

13,820 cubic yards of clay and hardpan were removed.

DREDGING AT GRENVILLE.

The dredge *Sir Richard* commenced work at this place, on November 4, 1901, and continued there up to November 16, the close of navigation, deepening along the north side of the steamboat landing.

The total quantity of material removed at this place consisted of 3,300 cubic yards of sand.

On June 9, 1902, dredging operations were resumed at this place by the dredge *T. F. M. No. 1*, and continued up to the end of the fiscal year, removing 1,075 cubic yards of clay.

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DREDGING AT IBERVILLE.

The dredge *Canals, No. 1*, commenced work at this place on July 1, 1901, and worked there up to August 8. The approaches to and in front of the wharfs were deepened to nine feet at low water.

5,475 cubic yards of hardpan and boulders were removed.

DREDGING AT LACHINE.

On June 26, dredging was commenced at this place by the dredge *No. 4 Moore*, and continued there up to the end of the fiscal year, deepening the approach to Dawe's wharf to 10 feet at low water.

The material removed consisted of 520 cubic yards of shale rock.

DREDGING AT MASSON.

Dredging operations were performed at this place by the dredge *T. F. M., No. 1*, between July 1 and August 28, 1901, continuing the deepening of the channel between the mouth of the river and the village of Masson.

20,650 cubic yards of hardpan, sand, clay and slabs were removed.

DREDGING AT PAPINEAUVILLE.

The dredge *T. F. M., No. 1*, worked at this place between October 27 and November 16, the close of navigation, removing 8,500 cubic yards of clay.

The work performed here consisted principally in widening and deepening the channel from the Ottawa river to Papineauville bay.

DREDGING AT POINTE CLAIRE.

The dredge *No. 4 Moore*, worked at this place, between August 19 and November 13, 1901, making an approach to the new government wharf.

2,338 cubic yards of hardpan and clay were removed.

As this is a very exposed locality, considerable lost time was experienced, and dredging operations were discontinued for the season.

DREDGING AT ST. IGNACE ISLAND.

On April 17, 1902, dredging operations were commenced at this place by the dredge *Nithsdale*, and on the 24th of the same month the dredge *St. Louis* was also put to work on the channel. The *St. Louis* continued work up to June 6, and the *Nithsdale* up to June 30, the close of the fiscal year.

The material removed by both dredges consisted of 25,656 cubic yards of sand.

DREDGING AT ST. JOHN'S.

Work was begun at this place on August 9, by the dredge *Canals No. 1*, and continued there up to November 16, the close of navigation, deepening the entrance to the Chambly canal.

12,255 cubic yards of clay and sand were removed.

On May 17, 1902, operations were resumed at this place by the same dredge and continued to the end of the fiscal year.

The material removed consisted of 5,730 cubic yards of hardpan, clay and boulders.

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DREDGING AT ST. MICHEL DE BELLECHASSE.

The dredge *Nithsdale* worked at this place between July 1 and November 16, 1901, deepening and widening the channel through the boulder shoal in front of the wharf. During the above period, 19,313 cubic yards of clay, boulders, stone and gravel were removed.

DREDGING AT SOREL.

Work was performed at this place by the dredge *St. Louis* between November 19 and 23, 1901, deepening alongside the government wharf. One hundred and eighty cubic yards of hard clay were removed. The plant was then laid up for the winter at Sorel.

DREDGING AT VALLEYFIELD.

Dredge *No. 4* Daly worked at this place between July 19 and October 17, 1901, widening and deepening the channel leading to the Cotton Mills.

14,220 cubic yards of clay and rock were removed.

The appropriation for this work being expended the operations were discontinued.

On June 3, 1902, operations were resumed at this place, by the same dredge and continued up to the 30th of the same month, removing 6,015 cubic yards of loose stone and rock.

DREDGING IN THE YAMASKA RIVER.

The Dredge *St. Louis*, was working at this place, on July 1, 1901, and continued there up to August 3, deepening the channel near the dam in the Yamaska river.

5,670 cubic yards of sand and clay were removed.

PROVINCE OF ONTARIO.

DREDGING AT ADOLPHUSTOWN.

On June 14, the dredge *Sir Richard* commenced work in front of Allison's wharf at this place, also in front of the town dock, deepening the approaches to 10 feet at low water.

DREDGING AT BATH.

Between May 22 and June 13, 1902, the dredge *Sir Richard* worked at this place deepening alongside the wharfs and approaches thereto, removing 3,900 cubic yards of mud and rock.

The dredging at this place was to a depth of 13 feet at low water.

DREDGING AT BESSERER.

The dredge *T.F.M. No. 1*, dredged at this place from August 31 to September 11, 1901, deepening in front of the wharf to allow freight and passenger vessels free access. 6,800 cubic yards of clay were removed.

DREDGING AT BOWMANVILLE.

Dredge *Queen* commenced work at this place on July 8, and continued there up to October 19, 1901, deepening between the piers to a depth of 14 feet at low water.

25,980 cubic yards of sand were removed.

Work was resumed at this place by the dredge *Nipissing* on May 17, and continued there up to June 30, the close of the fiscal year. One cut was made on west side of east pier, 1,300 feet long, 25 feet wide and 14 feet deep. Three other cuts were made at end of east pier, 500 feet long, 25 feet wide and 14 feet deep. Another cut was also made between the piers, 400 feet long, 25 feet wide and 14 feet deep.

The total quantity of material removed, by this dredge, consisted of 16,958 cubic yards of hardpan and sand.

DREDGING AT BRONTE.

The dredge *Nipissing* worked at this place between September 12 and October 19, 1901, dredging a new foundation for the crib-work, and deepening the harbour to a depth of 12 feet at low water. Three cuts were made, one 1,000 feet, one 800 feet and one 500 feet in length and 25 feet wide.

21,034 cubic yards of boulders, gravel, stones, sand and logs were removed.

As the balance of the appropriation allotted for improvements to this harbour, was required for pier work, dredging operations were discontinued. To complete this work it would require one more cut, between the piers, and the approach to the harbour widened, also a foundation made for the addition to the western pier.

DREDGING AT BURLINGTON.

The dredge *Nipissing* was working at this place, on July 1, 1901, and continued there up to August 24, deepening the channel and approaches to 16 feet at low water.

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An entrance to the lake end was made, 125 feet wide and at the bay end 75 feet wide and an average width between the piers of 45 feet. No greater width could be made between the piers, owing to the dilapidated condition of the cribwork. When the repairs to the piers are completed, another cut 30 feet in width, the whole length, could be safely made, which would then leave a channel of sufficient width and depth to permit the largest vessels, coming through the Welland canal, a safe entrance to Hamilton bay.

The material removed consisted of 32,952 cubic yards of gravel, sand and hardpan.

DREDGING AT CALUMET.

Between May 10, and June 7, 1902, the dredge *T. F. M. No. 1* worked on the channel leading from the Ottawa river to the C.P.R. dock at this place to allow free access for passenger vessels running from Hawkesbury to Calumet. This channel was dredged to a depth of 10 feet at low water, and 12,900 cubic yards of clay and sand were removed.

DREDGING AT COLLINGWOOD.

Operations were commenced at this place by the dredge *Challenge*, on May 15, 1902, and continued up to the close of the fiscal year. Dredging first at the town slip up to June 5, making three cuts 25 feet wide, 90 feet long and to a depth of 9 feet. Work was then commenced on the approach to Charleton's wharf and continued up to June 30, the close of the fiscal year, making one cut 56 feet long, 25 feet wide and to a depth of 16 feet at low water.

The total quantity of material removed consisted of 4,890 cubic yards of sand, clay and stone.

DREDGING AT HAMILTON.

The dredge *Nipissing* worked at this place between October 19 and 21, 1901, deepening the approach to the Royal Yacht Club's wharf, making one cut 25 feet wide, about 200 feet long, to a depth of 12 feet at low water.

The material removed consisted of 2,024 cubic yards of quick sand. At least three week's work would be required at this place to complete the channel needed for a proper entrance.

DREDGING AT HAWKESBURY.

On October 20, 1901, the new dredge *Sir Richard*, being completed, was put into commission, and commenced work at this place, with the new stone lifter, and continued there up to November 2, removing 3,000 cubic yards of clay and stone.

The dredge *Little Giant* also worked at this place between July 1, and September 14, 1901, deepening the channel between the entrance to the bay and the town docks. 24,840 cubic yards of clay, stone, hardpan and boulders were removed.

DREDGING IN THE KAMINISTIGUIA RIVER.

Work was commenced at this place by the dredge *Arthur* on August 23, and continued up to November 16, the close of navigation, work was resumed opposite the new oil docks, at the entrance of the river.

The material removed consisted of 39,548 cubic yards of sand and clay.

On April 21, 1902, operations were resumed at this place by the *Arthur* and continued up to June 30.

The material removed consisted of 30,563 cubic yards of sand and clay.

From May 15, to 30, and from June 9, to 30, 1902, dredging operations were performed at this place by Messrs. Porter and Bowman's dredge *No. 6*, deepening and widening the channel at the upper end of the river. 56,961 cubic yards of mud, clay and sand were removed.

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DREDGING AT KINCARDINE.

The dredge *Challenge* worked at this place, between July 2, and August 24, 1901, deepening the harbour between the piers, and in the basin.

23,820 cubic yards of sand, gravel and mud were removed.

DREDGING AT KINGSVILLE.

Dredging was commenced at this place, by the dredge *Ontario*, on May 14, 1902, and continued until June 30, the close of the fiscal year. One cut was made, on west side of east pier, 276 feet long, 25 feet wide and 12 feet deep. Owing to sand bottom, this cut has been filled up to a depth of only 8½ feet. Another cut was made on east side of west pier, 370 feet long, 25 feet wide, 14 feet deep, for putting in cribs, in connection with the extension of the west pier. A cut was also made through the bar, on the west side, 300 feet long, 25 feet wide, and 14 feet deep, for floating the cribs to their berths.

The material removed at this place consists of 14,715 cubic yards of quick sand, clay and boulders.

DREDGING AT MIDLAND.

The dredge *Challenge* worked at this place between August 26, and September 7, 1901. 1,380 cubic yards of hardpan and boulders were removed. The material at this place being of such a hard nature, and the plant being in such a shaky condition, it was found desirable to remove it to Owen Sound, where the material is of a soft nature.

DREDGING AT NOTRE DAME DE PIERREVILLE.

The dredge *St. Louis* commenced work at this place on August 4, 1901, and continued there up to November 18, deepening the channel between the ferry and Pierreville Mills.

15,585 cubic yards of sand and clay were removed.

On June 12, 1902, operations were resumed in this channel and continued up to June 30, the close of the fiscal year, removing 3,225 cubic yards of sand and clay.

DREDGING AT OSHAWA.

The dredge *Queen* was working at this place on July 1, 1901, and continued there up to July 6, deepening along the dock to enable the grain and coal vessels to unload. A depth of 12 feet at low water was made at this place, and 2,400 yards of sand were removed.

DREDGING IN THE OTTAWA.

The dredge *Little Giant* began operations at the outer channel of the Ottawa River, between Hawkesbury and Grenville, on September 16 and continued there until November 16, the close of navigation.

22,590 cubic yards of sand, boulders and hardpan were removed.

DREDGING AT OWEN SOUND.

The dredge *Challenge* started work at this place on September 9, and continued there up to November 16, where she was laid up for the winter. The work consisted of deepening and widening the harbour in front of new pile-work extension.

13,620 cubic yards of sand and clay were removed,

DREDGING AT PICKERING.

The dredge *Queen* worked at this place between October 20 to November 16, 1901, the close of navigation, deepening between the piers to a depth of 14 feet at low water. One cut was also made along the dock and ice-house to enable vessels to unload coal, &c.

4,260 cubic yards of sand were removed.

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DREDGING AT PORT ARTHUR.

The dredge *Arthur* commenced operation at this place on July 1, 1901, and continued up to August 21, deepening an approach to the new McKenzie and Mann elevator. The material removed consisted of 24,300 cubic yards of clay and sand.

The dredge *No. 6* also worked at this place between October 19 and November 15. This dredge, the property of the Dock and Dredging Co., was put to work at the approach to the McKenzie and Mann elevator, and removed 53,861 cubic yards of mud.

This latter work was done by the yard under contract.

DREDGING AT PORT HOPE.

The dredge *Nipissing* commenced work at this place on October 26, 1901, and continued there up to November 16, the close of navigation. A sand bar was removed, which had formed along the west pier, proving an obstruction to vessels, entering the new harbour, a shoal was also removed, in front of the freight sheds, in the old harbour; the dredging was done to a depth of 14 feet at low water.

Eight thousand one hundred and seventy-four cubic yards of sand were removed.

Three months work is still required at this place, to complete the deepening of the new harbour.

On November 17 the plant was removed to Kingston and placed in winter quarters.

DREDGING AT PORT STANLEY.

The dredge *Ontario* was working at Port Stanley, Ont., on July 1, and continued work up to August 27, 1901, deepening and widening the entrance of the harbour, and between the piers as well as in the basin. A channel was made between the piers 400 feet long, 50 feet wide, and 12 feet deep at low water. A turning basin was made 180 feet square and 12 feet deep. Two cuts were also made alongside of the new dock and the material cast over to fill in the new cribwork.

The quantity of material removed consisted of 18,855 cubic yards of sand, gravel, clay and mud.

DREDGING AT RONDEAU.

From September 3 to November 16, 1901, the dredge *Ontario* worked at this place. A channel was made through the bar, outside the piers, 450 feet long, 75 feet wide, and 17 feet deep. A cutting was also made on the east side of the east pier, 150 feet long, 100 feet wide, and 12 feet deep.

The total quantity of material removed, at this place, was 20,395 cubic yards of clay, sand and mud. The dredge was then laid up for the winter.

Dredging operations were resumed at this place, by the same dredge, on April 8, 1902, and continued there up to May 10. A cut was made through the bar, outside of piers, 200 feet long, 25 feet wide and 19 feet deep, also one cut alongside, 600 feet long, 25 feet wide and 19 feet deep. One cut was also made, on west side of east pier, 200 feet long, 25 feet wide and 19 feet deep. A pile dock was removed for the Lake Erie and Detroit River railway.

The total quantity of material removed was 7,020 cubic yards of sand and clay. Also about 250 piles and cap pieces were taken out for the Lake Erie and Detroit River railway.

DREDGING AT TRENTON.

The dredge *Trenton* was working at this place on July 1, and continued work there up to September 18, 1901, completing the widening of the approach to the Central Ontario railway dock.

Thirty-three thousand one hundred and forty cubic yards of gravel, rock and mud were removed.

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DREDGE STATEMENT.

STATEMENT of Expenditure and Quantities of Material Removed by the various Dredges at different localities in Ontario and Quebec, during the Fiscal Year ended June 30, 1902.

Dredge.	Location.	Yards removed.	Character of Soil.	Expenditure.	Cost per Yard.
Challenge.....	Kincardine.....	23,820	Sand, mud and gravel.....	\$ cts.	cts.
".....	Midland.....	1,380	Hardpan and boulders.....	7,898 22	18 $\frac{3}{5}$
".....	Owen Sound.....	13,620	Sand, clay and stone.....		
".....	Collingwood.....	4,890	" ".....		
Ontario... ..	Port Stanley....	20,215	Sand, clay, mud and gravel..	5,824 07	9 $\frac{1}{2}$
".....	Rondeau.....	26,065	" ".....		
".....	Kingsville.....	14,715	Sand, clay and quick sand..		
Nipissing.....	Burlington Piers.....	32,952	Sand, gravel and fine sand..	9,863 05	12 $\frac{3}{25}$
".....	Bronte.....	21,034	Sand, logs and boulders....		
".....	Hamilton.....	2,024	Quick sand.....		
".....	Port Hope.....	8,174	Sand.....		
".....	Bowmanville.....	16,958	Hard packed sand.....		
Queen.....	Oshawa.....	2,400	Sand.....	5,775 67	17 $\frac{7}{10}$
".....	Bowmanville.....	25,980	".....		
".....	Dunbarton.....	3,180	".....		
".....	Pickering.....	1,080	".....		
Sir Richard... ..	Hawkesbury.....	2,850	Clay and gravel.....	6,301 35	52 $\frac{2}{5}$
".....	Grenville.....	3,300	Sand.....		
".....	Bath.....	3,900	Mud and rock.....		
".....	Adolphustown.....	2,050	Clay, mud and sand.....		
St. Louis.....	Yamaska.....	5,670	Sand and clay.....	3,502 11	11 $\frac{3}{10}$
".....	Notre Dame de Pierreville...	18,810	".....		
".....	Sorel.....	180	Clay.....		
".....	St. Ignace.....	6,300	Sand.....		
Canals No. 1..	Iberville.....	5,175	Hardpan and boulders.....	4,218 06	18 $\frac{1}{5}$
".....	St. John's.....	17,985	Hardpan, clay and boulders..		
Nithsdale.....	St. Michel.....	19,315	Clay, stone and gravel.....	15,654 76	40 $\frac{1}{5}$
".....	St. Ignace.....	19,356	Sand.....		
Little Giant..	Hawkesbury.....	24,840	Boulders, clay and stone ..	10,299 75	18 $\frac{3}{5}$
".....	Ottawa River.....	22,590	Hardpan, stone, boulders..		
".....	Chateauguay.....	7,800	Clay, sand and boulders....		
No. 4 (Moore).	Graham's Wharf....	13,820	Hardpan and clay.....	9,394 10	16 $\frac{1}{5}$
".....	Pointe Claire.....	23,380	".....		
".....	Dorval.....	20,280	Clay and sand.....		
".....	Dawe's, Lachine.....	520	Clay and rock.....		

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DREDGE STATEMENT—*Concluded.*

Dredge.	Location.	Yards removed.	Character of Soil.	Expendi- ture.	Cost per Yard.
T. F. M. No. 1.	Masson	20,650	Sand, clay and slabs.	\$ cts. 13,004 37	cts. 16 ³ / ₅
" ..	Besserrer.	6,800	Clay		
" ..	Blanche Shoals	21,325	Sand		
" ..	Papineauville.	8,500	"		
" ..	Calumet.	12,900	Clay and sand.		
" ..	Grenville.	10,750	Clay.		
No. 4 (Daily)..	Valleyfield.	20,235	Stone and rock.	7,893 50	39
No. 4, 5 & 6...	Coteau Landing.	36,750	Boulders and clay.	9,584 10	26 ² / ₅
Arthur.	Port Arthur.	22,300	Sand, clay and quick sand.. }	17,077 50	18 ¹ / ₂
" ..	Kaministiquia	70,111	" " .. }		
No. 6 (B. & Co.)	Port Arthur.	81,041	Mud, clay and quick sand.. }	21,994 49	15 ⁹ / ₁₆
" ..	Kaministiquia	56,961	" " .. }		
Trenton	Trenton	32,940	Mud, rock and gravel.	5,967 00	18 ¹ / ₅

DREDGING MANITOBA.

LAKE FRANCIS OUTLET.

There has been no work done in connection with the dredging of a new channel at the outlet of Lake Francis owing to the fact that no dredge was available during the fiscal year to do the work with.

Many people, particularly those interested in the fisheries, have been clamouring for an outlet to Lake Francis, as the original one was filled in and a sand bar formed right across its mouth.

It is also contended that the channel is required not only for the purpose of affording an outlet to Lake Francis, but to afford a much needed harbour of refuge, as there is no such harbour on the east shore of the southern expanse of Lake Manitoba, so that the safety of navigation is impaired for want of such harbours during the storms that are very prevalent.

On account of the above the fishing industry appears to be crippled, as the abundance of fish in the lake is established.

The trouble with the fishermen appears to be, not to catch the fish, but to land it in a safe place.

MOUTH OF WHITE MUD RIVER.

There was no work done to improve the channel at the Mouth of White Mud river owing to the fact that there was no dredge available before the end of the year.

I might say, however, that navigation has not suffered much owing to the excessively high water on the lake this year.

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DREDGE 'WINNIPEG.'

During the latter part of the season 1901, the dredge *Winnipeg* was kept at work excavating the new channel at the mouth of the Red river, until the week ending August 17, when the dredge had to be laid up for want of funds to carry on the work; the total quantity excavated aggregated 27,680 cubic yards of clayey material. The dredging plant was then towed into the slough at West Selkirk and tied up for a time until contractors for St. Andrew's Rapids lock and dam work, rented the plant for the balance of the season to do some dredging at St. Andrew's Rapids lock and dam work. Then the plant was finally laid up in winter quarters about October 29.

Work of repairs was proceeded with and kept up until May 8 this year, when the work of equipping the plant for the season was completed and operations started. The plant was towed to the mouth of the Red river, the old channel was buoyed and soundings taken. It was found that two sand bars had formed across the old channel which rendered navigation impossible so that the bars had to be dredged out to the necessary depth and width in order to permit vessels to make use of the channel. This last season the work of dredging the bars were kept up until June 21, when it was discontinued after excavating 10,560 cubic yards.

Then the plant was moved into the new channel to prosecute that work. The total expenditure as shown in statement of classification of disbursements which comprises heavy repairs, in keeping up the old dredging plant in good working condition, appears somewhat high, the average cost per cubic yard being, 26.95 cents, but considering that all the work of repairs is included in the computation as being part of the working expenses, it is fair, as if the cost of repairs was excluded from the calculation, the average cost per cubic yard would be reduced to 17.22 cents.

Expenditure during fiscal year \$8,018.81.

CLASSIFICATION OF Disbursements of the Dredge Winnipeg, during the Year ended June 30, 1902.

Items.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages	670 40	513 67	132 50	105 96	262 30	106 25	80 00	86 70	431 79	583 10	545 41	671 83	4,189 91
Coal	957 62	750 02	.....	.....	.....	.....	.....	.....	.....	492 20	628 60	.....	2,828 44
Wood .. .. .	.....	3 12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3 12
Provisions.....	137 64	309 76	.....	.....	.....	.....	.....	.....	.....	55 35	135 62	357 46	995 83
Stores	118 62	.....	.....	.....	.....	.....	.....	.....	18 25	.....	29 00	.....	136 87
Equipment.....	.....	93 15	.....	.....	.....	.....	.....	.....	.....	96 05	.....	.....	125 05
Repairs	21 00	7 30	.....	.....	.....	.....	.....	.....	528 75	770 04	421 12	158 86	1,992 92
Contingencies.....	.....	.....	.....	.....	.....	.....	.....	.....	17 85	4 00	6 00	.....	35 15
Totals.....	1,905 28	1,677 02	132 50	105 96	262 30	106 25	80 00	86 70	996 64	2,000 74	1,765 75	1,188 15	10,307 29
Working expenses.....	1,884 28	1,583 87	132 50	105 96	262 30	106 25	80 00	86 70	.....	.....	1,315 63	1,029 29	6,586 78
Repairs, ordinary.....	21 00	93 15	.....	.....	.....	.....	.....	.....	996 64	2,000 74	450 12	158 85	3,720 51
Totals...	1,905 28	1,677 02	132 50	105 96	262 30	106 25	80 00	86 70	996 64	2,000 74	1,765 75	1,188 15	10,307 29

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DREDGING BRITISH COAUMBIA.

NANAIMO HARBOUR.

The dredge *Mud Lark* was moved from Victoria harbour on October 24, for the purpose of completing the dredging of the south channel approach to Nanaimo harbour and deepening in front of some of the coaling wharfs, all of which work, as a subsequent survey shows, has been well done, and a uniform depth of 30 feet at low tide made throughout the entire channel. The work was completed by the middle of February, and the expenditure was \$4,943.12.

Dredge 'King Edward.'

This new hydraulic dredge was accepted from the contractors and placed in commission on November 1, 1901, and an official test was made on the 6th of the same month. The test proving satisfactory, and on the assurance that the completion of the upper works, comprising the cabins, mess rooms, officers' and men's quarters, and other works covered by the specifications, would be done satisfactorily. This dredge has been variously employed at South Westminster, Pender Island, Chilliwack, Ladner, and Victoria harbour.

In every case where the material was at all favourable, giving very good results, quite coming up to anticipations, and, in her effectiveness for her particular class of work is a most valuable addition to the plant.

The expenses in connection with her work was \$16,121.67.

Dredge 'Mud Lark.'

The work of the dredge *Mud Lark* in connection with dredging British Columbia was deepening in front of the Union wharf at Comox, and completing the work at Pender Island. The *King Edward* being unable to make any impression on the hard pan encountered, was moved to Chilliwack and replaced at Pender by the *Mud Lark* on the completion of her work at Union, or on April 15 last, and only completed that work on September 11. The very hard nature of the excavation in the bottom of the cut, the delay caused by the failure of the water supply, to get which the tank scow had to be sent to either Ladysmith or Victoria, and the generally dilapidated condition of the dredge, entailing frequent breakdowns and consequent loss of time, delayed the completion of this work beyond all expectation, but a channel is now opened connecting Bedwell and Browning harbours 65 feet wide, and not less than 7 feet depth of water at extreme low tide.

The expenditure in connection with the *Mud Lark* on the service above stated to the end of June, 1902, is \$4,625.22.

Snag Boat 'Samson.'

The *Samson* has been engaged in her usual duties removing snags, replacing buoys, surveys at Nanaimo and on Fraser river, driving piles, and various other works in which her services are indispensable. She is possibly the most generally useful boat in our outfit, although she has now about reached her limit of usefulness. Her hull is far gone, and it is only by the greatest care that we avoid a possible collapse at any time. Her hull has been condemned by the Dominion inspector, as beyond repair, so we can only exercise every care until she is replaced by a new steamer, which should be built this winter.

The expenditure in connection with the *Samson* is \$9,801.75.

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DREDGE REPAIRS, B. C.

Snag Boat 'Samson.'

The small amount in repairs to the *Samson* is attributable to the fact that to attempt to make the much needed repairs would develop an amount of work equivalent to an entirely new hull, and with unsatisfactory results, so we are exercising the greatest care in her working, in the hope that the department will see fit to provide a new boat before the present one becomes entirely useless. The utility of the *Samson* is possibly not as fully recognized as she deserves. In addition to her own duties, which are constant and exacting, she is the recognized agent of the Marine and Fisheries Department in moving buoys into their proper positions from change of channel, replacing those frequently carried away, repairing protection to lighthouse by piling, and various other duties, which would make her being incapacitated seriously felt.

The expenditure only represents ordinary repairs, as follows :—Repairs ordinary—\$393.73.

Dredge 'King Edward.'

This expenditure is represented by the cost of putting in two additional rudders' four being found necessary in all stern wheelers in rapid water, and a new set of spuds' 40 feet instead of 60 feet, as better adapted for ordinary dredging in a depth of 10 feet at low water. The extreme weight of the long spuds, some 6 tons each, was an unnecessary strain on the machinery. New shoes of a different pattern and sharper point were found necessary to hold the dredge in swift water and on the hard bottom encountered. The expenditure entailed in perfecting the general working of the machinery and convenience of the boat was as follows :—Repairs extraordinary, \$1,519.17.

Dredge 'Mud Lark.'

The repairs to this dredge, her tender the tug *Princess*, and the two hopper scows after the heavy work in Nanaimo harbour and before beginning work on Tuzo Shoal in Victoria harbour were heavy, but the expenditure was necessary and was as follows :—

Repairs, ordinary	\$ 363 02
“ extraordinary	2,716 73
Total	\$3,079 75

RECAPITULATION.

Snag boat <i>Samson</i> , ordinary	\$3,393 73
Dredge <i>King Edward</i> , extraordinary	1,519 17
“ <i>Mud Lark</i> , ordinary	363 02
“ “ extraordinary	2,716 73
Total	\$4,992 65

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DREDGING PLANT.

The following is a summary description of the dredging plant owned and operated by the Public Works Department in the various parts of the Dominion.

MARITIME PROVINCES.

The self-propelling elevator dredge *St. Lawrence* (iron hull)—

Length over all.....	175 feet.
Beam	30 "
Draught when loaded, aft.....	13.5 "
" " forward.....	8.5 "
Least working depth (ladder with 32 buckets dropped 30 feet from bow).	8.5 "
Greatest working depth (bucket ladder dropped 40 feet from bow).....	28.0 "
Capacity of hopper for spoil material.....	350 cubic yards.
Speed when light.....	6 to 7 miles per hour.
Speed when loaded.....	3 to 4 "
Daily rate of dredging in hard material.....	350 to 700 cubic yds.
" " ordinary earth.....	750 to 1,000 "
" " soft material.....	1,050 to 1,400 "

The self-propelling elevator dredge *Canada* (iron hull)—

Length over all.....	130 feet.
Beam	20 "
Draught when loaded, aft.....	11.5 "
" " forward.....	7.0 "
Least working depth.....	7.0 "
Greatest working depth (ladder 24 buckets).....	16.0 "
Capacity of hopper for spoil material.....	90 cubic yards.
Speed when light and newly painted.....	6 to 7 miles per hour.
Speed when loaded.....	3 to 4 "
Daily rate of dredging in hard bottom.....	180 to 270 cubic yards.
" " with ordinary digging.....	180 to 360 "
" " in soft material.....	360 to 450 "

The spoon dredge *New Dominion* (wooden hull)—

Length over all .. .	90 feet.
Width.....	28 "
Draught	5½ "
Greatest working depth.....	21 "
Daily rate of dredging in hard material.....	300 cubic yards.
" " with ordinary material.....	450 "
" " in soft material.....	600 to 700 "
Number of dump scows or barges used.....	4

The spoon dredge *Prince Edward* (wooden hull)—

Length over all.....	80 feet.
Width.....	28 "
Draught	6 "
Greatest working depth	21 "
Daily rate of dredging in hard material.....	300 cubic yards.
" " with ordinary material.....	500 "
" " in soft material.....	600 to 700 "
Number of dump scows or barges used	3

The spoon or dipper dredge *George McKenzie* (wooden hull)—

Length.....	90 feet.
Width.....	28 "
Draught.....	5 "
Greatest working depth.....	22 "
Daily rate of dredging in hard material.....	350 cubic yards.
" " ordinary material.....	500 "
" " soft material.....	600 "

The boom and dipper dredge *Cape Breton* (steel hull)—

Length.....	91 feet.
Beam	36 "
Draught.....	7½ "
Greatest working depth.....	34 "
Daily rate of dredging in hard material.....	1,000 cubic yards.
" " ordinary material.....	1,500 "
" " soft material.....	2,000 "
Number of barges used (each of 210 cubic yards capacity).....	2

N. B. Tug service performed by hired tugs in the Maritime Provinces.

The Clam Shell dredge (wood) *Clam Shell*

with 3 decked scows.

One pile driver, engine and boiler fitted on scow.

One stone lifter, engine and large grips.

One (old) small scow for coal belonging to *New Dominion* at St. John, unfit for use.

Two old side hopper scows at Pictou unfit for use, belonging to dredge *Prince Edward*.

One old side hopper scow at Pictou, belonging to dredge *George McKenzie* unfit for use.

One steam launch *Cricket*.

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SHIP CHANNEL, RIVER ST. LAWRENCE, BETWEEN QUEBEC AND MONTREAL.

The elevator dredge *Laurier* (wooden hull)—

Length over all	168·0 feet.
Width of beam.....	32·0 "
Depth of hold.....	14·0 "
Average draught.....	10·5 "
Greatest working depth.....	42·5 "
Daily rate of dredging in hard clay, about.....	1,700 cubic yards.
" " ordinary earth, about.....	3,000 "
" " soft clay (Lake St. Peter).....	4,000 "

The elevator dredge *Laval* (wooden hull, small bucket)—

Length over all.....	150·0 feet.
Width of beam.....	30·0 "
Depth of hold.....	14·0 "
Average draught.....	11·0 "
Greatest working depth.....	43·5 "
Daily rate of dredging in hard material.....	400 cubic yards.
" " ordinary clay.....	2,000 "

The elevator dredges *Nos. 11 and 12* (wooden hulls)—

Length over all.....	137·0 feet.
Width of beam.....	29·5 "
Depth of hold.....	11·0 "
Average draught.....	8·5 "
Greatest working depth.....	38·0 "
Daily rate of dredging in hard material about.....	200 cubic yards.
" " ordinary clay ".....	2,000 "

The elevator dredge *No. 8* (wooden hull)—

Length over all.....	137·0 feet.
Width over all.....	29·6 "
Depth of hold.....	11·0 "
Average draught.....	8·6 "
Greatest working depth (short bucket frame).....	27·0 "
Daily rate of dredging in hard material, about.....	200 cubic yards.
" " soft clay, about.....	1,800 "
" " ordinary clay, about.....	1,200 "

Elevator dredge *No. 4*.—

Length over all.....	77 feet 3 inches.
Beam.....	27 feet 0 inches.
Depth.....	6 feet 6 inches.
Built.....	1872.
Engine.....	Horizontal non-condensing.
Cylinder { Diar.....	14 inches.
Stroke.....	16 inches.
Steam pressure.....	85 lbs.
Capacity of bucket.....	2½ cubic yards.
Depth to which dredge can work.....	33 feet.

Rebuilt and altered in 1880.

Elevator dredge *No. 7*.—

Length over all.....	77 feet 3 inches.
Beam.....	27 feet 0 inches.
Depth.....	7 feet 0 inches.
Built.....	1874.
Engine.....	Horizontal non-condensing.
Cylinder { Diar.....	14 inches.
Stroke.....	16 inches.
Steam pressure.....	85 lbs.
Capacity of bucket.....	1½ cubic yards.
Depth of which dredge can work.....	32 feet.

Rebuilt in 1889.

The stone lifter *No. 2* (wooden hull)—

Length over all.....	80·0 feet.
Breadth.....	25·0 "
Depth to hold.....	7·9 "
Size of well.....	22 by 10·0 "

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Fourteen dumping scows, the dimensions and capacities of which are as follows:—

No. of Scows.	Length.	Breadth.	Depth of Hold.	Capacity.
1.....	60 feet.	16 feet.	6½ feet.	60 cubic yards.
7.....	80 "	16 "	7 "	75 "
2.....	84 "	20 "	8 "	150 "
2.....	90 "	18 "	7 "	150 "
2.....	95 "	23 "	8½ "	200 "

The coal barge *Caroline*—

Length over all.....	103·7 feet.
Breadth.....	25·5 "
Depth of hold.....	8·3 "
Capacity.....	250 tons.

The coal barge *Waverly*—

Length over all.....	100·0 feet.
Breadth.....	20·9 "
Depth of hold.....	7·1 "
Capacity.....	250 tons.

The coal scow *No. 1*—

Length over all.....	80·0 feet.
Breadth.....	16·0 "
Depth of hold.....	4·5 "
Capacity.....	90 tons.

The coal scow *No. 2*—

Length over all.....	54·0 feet.
Breadth.....	18·0 "
Depth of hold.....	4·0 "
Capacity.....	60 tons.

The sounding scow—

Length over all.....	60·0 feet.
Breadth.....	25·0 "
Depth of hold.....	4·5 "

The winch scow *No. 1*—

Length over all.....	54·0 feet.
Breadth.....	18·0 "
Depth of hold.....	4·0 "

The winch scow *No. 2*—

Length over all.....	50·0 feet.
Breadth.....	19·0 "
Depth of hold.....	4·0 "

The above ship channel plant was attended in 1901-2 by the tugs *John Pratt*, *St. James*, *St. Francis*, *C. J. Brydges*, *M. J. Parsons*, *Cartier*, *St. John d'Iberville* and *Emelia*.

The spoon dredge *St. Louis* (wooden hull)—

Length.....	50·0 feet.
Width.....	14·0 "
Depth of hold.....	4·0 "
Draught.....	2·5 "
Greatest working depth.....	12·0 "
Daily rate of dredging in hard-pan, &c.....	50 cubic yards.
" " soft material.....	300 "

Dredge attended by tug *Daisy* with two dump scows, having a capacity of 30 cubic yards; plant used only for light digging.

A twin stone lifter (catamaran style)—

Length of each wooden hull.....	42·0 feet.
Width.....	8·5 "
Depth of hold.....	3·0 "
Draught.....	1·0 "
Distance between hulls.....	7·0 "

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One wooden scow for reserve and supply for Q. & O. dredging fleet.—

Length.....	59·0 feet.
Breadth.....	17·0 "
Depth of hold.....	8·3 "
Draught when loaded.....	6·0 "
Capacity.....	100 tons.

QUEBEC AND ONTARIO.

The elevator dredge *No. 9* (wooden hull)—

Length.....	137·0 feet.
Width.....	29·0 "
Depth of hold.....	11·0 "
Draught.....	9·0 "
Greatest working depth.....	38' "
Daily rate of dredging in hard material.....	200 cubic yards.
" " soft "	2,000 "

Dredge attended by tug *Delisle* with two dump scows, each of 80 cubic yards capacity.

The dipper dredge *Queen* (wooden hull)—

Length.....	65·3 feet.
Width.....	25·0 "
Depth of hold.....	5·0 "
Draught.....	3·0 "
Greatest working depth.....	16·0 "
Daily rate of dredging in hard material.....	200 cubic yards.
" " in medium firm material.....	400 "
" " in soft material.....	600 "

Dredge attended by tug *Ottawa* with two dump scows, of 60 cubic yards capacity.

The dipper dredge *Nipissing* (wooden hull)—

Length.....	70·7 feet.
Width.....	25·0 "
Depth of hold.....	6·0 "
Draught.....	4·5 "
Greatest working depth.....	20·0 "
Daily rate of dredging in hard-pan, etc.....	300 cubic yards.
" " in stiff clay.....	500 "
" " in soft clay and sand.....	800 "

Dredge attended by tug *St. Paul* and two dump scows, of 75 cubic yards capacity.

The dipper dredge *Ontario* (wooden hull)—

Length.....	75·0 feet.
Width.....	25·0 "
Depth of hold.....	7·0 "
Draught.....	4·5 "
Greatest working depth.....	22·0 "
Daily rate of dredging in hard material.....	300 cubic yards.
" " in medium firm material.....	500 "
" " in soft clay and loose sand.....	800 "

Dredge attended by tug *Sir John* with two dump scows, of 100 cubic yards capacity.

The dipper dredge *Challenge* (wooden hull)—

Length.....	70·5 feet.
Width.....	25·0 "
Depth of hold.....	6·0 "
Draught.....	4·5 "
Greatest working depth.....	21·0 "
Daily rate of dredging in hard material.....	300 cubic yards.
" " in medium firm or ordinary earth.....	500 "
" " in soft clay and loose sand.....	800 "

Dredge attended by tug *Trudeau* with two dump scows, having a capacity of 60 cubic yards.

MANITOBA.

The dipper dredge *Winnipeg* (wooden hull)—

Length.....	71·0 feet.
Width.....	25·0 "
Depth of hold.....	6·0 "
Draught.....	4·5 "
Greatest working depth.....	20·0 "
Daily rate of dredging in hard material.....	300 cubic yards.
" " in ordinary earth.....	500 "
" " in soft clay and loose sand.....	800 "

Dredge attended by tug *Sir Hector* with two dump scows, having a capacity of 60 cubic yards, and a coal barge.

The *Priestman* dredge.

The steamer *Victoria*.

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BRITISH COLUMBIA.

The dredge *King Edward*, a new dredge (not described)

The dipper dredge *Mud Lark* (wooden hull)—

Length.....	90·0 feet.
Width.....	30·0 "
Depth of hold...	7·9 "
Draught.....	4·6 "
Greatest working depth.....	40·0 "
Daily rate of dredging in hard-pan and gravel and boulders.....	300 to 400 c. yds.
" " in medium hard earth.....	500 to 600 "
" " in soft material, mud, etc.....	800 "

Dredge *Mud Lark* attended by tug *Princess* and three dump scows.

The self-propelling stern-wheel, clam-shell dredge *Muskrat*—

Length.....	60 0 feet.
Width.....	30·0 "
Depth of hold.....	3·3 "
Draught.....	1·7 "
Daily rate of dredging in loose gravel, etc., the only kind of material which has been worked so far.....	300 cubic yards.

The Muskrat is now dismantled.

The snag-boat *Samson* and one scow.

The snagging scow built for use on the Fraser while the *Samson* was operating on the Stikine.

GRAVING DOCKS.

The Dominion government owns and maintains three graving docks, viz. :—The Lorne Graving Dock at Lévis, in the province of Quebec; the Kingston Graving Dock at Kingston, in the province of Ontario; and the Esquimalt Graving Dock at Esquimalt, near the city of Victoria, in British Columbia.

LEVIS GRAVING DOCK.

During the year a new slip was constructed, ordinary repairs made, and the dock was maintained in an efficient manner.

Construction and repairs.....	\$ 2,226 26
Staff and maintenance.....	14,866 21
	<hr/>
	\$ 17,092 47

ESQUIMALT GRAVING DOCK.

During the year 22 vessels aggregating 45,625 tons were docked, and occupied it 192 days, and the dues collected amounted to \$14,517.19. Besides attending to the above duties the staff were employed, variously, repairing and keeping the plant in good working order, viz. : Engines and boilers painted and boiler-rooms whitewashed.

Caisson placed on the outside berth, and outer invert repaired, and hauling gear cleaned and painted, eyebolts forged and holes drilled in pier-head coping and bolts put in.

Fences whitewashed and all outdoor wood-work painted. Caisson inside and outside scaled and painted, all joints in steam pipes renewed, and safety-valves repaired:

New stud-bolts put in valves of large pumps, stop-gate scaled and painted. Engine room platform repaired. New relief cocks put in air pumps. Shaft of centrifugal pump repaired.

Ashes spread and hollows filled up. Offal buried and gutters flushed out Latrines and urinals cleaned out and whitewashed. Drainage cups made for engines, and furnace doors painted.

Decayed planking, shores and timber cut up for firewood. New skylights put in cement shed and boiler room. Gangway irons, ladders and trestles repaired.

Rock blasted in rear of engine rooms, retaining wall built and road to dumping ground made. Pipe heaters fitted in engine room. Drift logs collected for shores, to replace those rotted and worn out.

Differential pulley blocks and hydraulic jacks repaired. New screw stud-bolts for cylinder covers made, and iron wheelbarrows repaired.

New foundation put under engineer's dwelling house. Dock boat repaired. Fences around dock repaired and a new piece put up in south-east corner of yard.

Trenches dug, and drain pipes laid around engineer's house. Warping buoys taken up, cleaned and painted, and 30 fathoms of 1½ inch chain added to moorings.

Expenditure during fiscal year :—

Construction and repairs.....	\$ 1,200 00
Staff and maintenance	13,277 89
	<hr/>
	\$ 14,477 89

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KINGSTON DRY DOCK.

Alteration of Entrance.

The work of improving the entrance to the dry dock was commenced in May, 1902, and completed about June 25 of the same year.

The alterations made consist in the lowering of the coping of the entrance walls 2 feet 6 inches, and widening the entrance for that depth from 55 feet to 69 feet 3 inches, and in increasing the practical length of the dock about 25 feet by cutting a groove or recess 3 feet wide in the steps forming the head of the dock.

These alterations were made to comply with a request made by vessel owners having boats plying between Lake Ontario ports.

It was represented that the Kingston dry dock in its present shape could not accommodate the largest class of side-wheel steamers navigating on the lake.

It was impossible for them to dock their boats for cleaning, and in case of accidents at the beginning of a season they were liable to lose considerably for want of a dock large enough to take these boats for immediate repairs.

There are now four side-wheel steamers on Lake Ontario having an extreme width, at wheel section, over 55 feet. These are :—

The <i>Chippewa</i>	Extreme width 68 feet.
“ <i>Corona</i>	“ 58 “
“ <i>Toronto</i>	“ 64 “
“ <i>Kingston</i>	“ 66 “

The first two belong to the Niagara Navigation Company, and the two others to the Richelieu and Ontario Navigation Company.

After mature consideration it was decided to make the necessary alterations in order to accommodate these boats, as the changes required would not spoil the appearance of the dock, and would bring an increased revenue.

The *Chippewa* being the largest boat, her cross section was used as a guide in altering the entrance walls.

The two top courses of the masonry at the entrance were first removed, and the third course cut down 6 inches.

Then the coping stones were replaced on top of the third course, thus lowering the walls 2 feet 6 inches for a width of 7 feet on each side of the dock. The concrete filling at the back of the stone masonry was found to be very hard to remove, and had to be blasted with dynamite.

As the *Chippewa* was a few feet longer than the dock, to lengthen it a groove or recess 3 feet wide was cut in the head steps of the dock, thus doing away with the necessity of removing the caisson gate from its berth, and placing it at the end of the walls 23 feet farther out, a tedious and troublesome operation requiring the aid of a diver to clean the bottom chamber left for that purpose at the outer end of the entrance walls.

In remodelling the top of entrance walls and the head steps, Portland cement concrete was used ; proportions, 1 cement, 2 sand, 4 broken stone.

One hundred barrels of Star brand cement was used.

When the work was completed the *Chippewa* was docked without difficulty, the lower paddles of her wheels having been removed. The water level then stood 16 feet 2 inches above sill, or about 8 inches above low water level.

It was found that at that level the boat's wheel wings or flanges had a clear space of about 12 inches above the lowered portion of the walls, showing that at low water she could still be docked with a clearance of 4 inches.

The work done presents a substantial and neat appearance.

The cost of the improvements is.	\$2,077 06
Staff and maintenance.....	5,386 86

Total..... \$7,463 92

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The high scale of wages prevailing made the alteration a little more expensive than anticipated.

But as the docking of two of the above mentioned boats has already brought a revenue of \$800 to the government it will be seen that the money spent is a good investment and that the change was a desirable one.

RIVIÈRE DU LIÈVRE.

Little Rapid is 12 miles above the village of Buckingham, in the county of Labelle. A lock and dam were completed at this place in 1892 to overcome the difficulties encountered by boats navigating the Lièvre river and to drown the Long rapid, 7 miles farther up the river, thus giving a continuous stretch of navigation as far as the High Falls, a total distance of 22 miles.

The lock and dam have been kept in a good state of repair and working condition since their completion.

In the spring of 1901, one of the cast iron gate valves was found broken ; it could not be replaced without first procuring stop-logs to dam the water above the gate. In the meantime the opening left by the broken valve was planked over by a diver and the lock was worked with one valve.

In the fall of 1901, twenty-eight pine stop-logs 12 x 12 inches were procured and four cast iron valves, so as to have some of these on hand whenever required. The work of replacing the valve was not done until the month of September, 1902.

During the last fiscal year the cost of maintenance and minor repairs was \$856.32 ; expenses in connection with broken valve, \$667.17 ; total, \$1,533.49.

SLIDES AND BOOMS.

The Dominion government owns and operates slide and boom works built to facilitate the passage of square timber, round logs, flatted and dimension timber, &c., on the River Ottawa and tributaries, on the lower 40 miles or so of the St. Maurice, and in the Trent and Newcastle district between Fenelon Falls and Heeley's Falls.

In the subjoined reports, the superintending engineers of these river works, Messrs. G. P. Brophy, F. X. Thos. Berlinguet, and S. Clegg, give particulars relative to the works of construction, improvement and repair carried out under their supervision on government slides, booms, piers, dams, streams, buildings, &c., during the fiscal year, the expenditures incurred for staff, maintenance, improvements, &c., the quantities of the various descriptions of timber that pass through their works, and other information of general interest and utility to lumbermen and the public at large.

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REPORT ON THE OTTAWA RIVER WORKS.

(By G. P. BROPHY, SUPERINTENDING ENGINEER.)

OTTAWA, September 27, 1902.

E. D. LAFLEUR, Esq.,
Acting Chief Engineer,
Public Works of Canada.

SIR,—In accordance with instructions received from your department in communication No. 1931, dated July 8 last, I have the honour to submit the following report on the works under my charge on the Ottawa and tributary rivers for the fiscal year ended June 30 last.

As is usual, at the low water season of 1901, after the rafts and saw-log drives had passed the various stations, an examination of the foundations of the river structures was made and the necessary repair work begun and continued during the close season of navigation preparatory to the passage of timber in the spring of 1902.

These works may be described as follows :—

REPAIRS AT STATIONS ON THE OTTAWA RIVER (Main Stream).

St. Vincent de Paul (back of Montreal).—Certain boulders, supposed to have been lodged by the movement of ice in the rapids between Bord-a-Plouffe and St. Vincent de Paul, were removed to enable the raftsmen to run with greater safety larger bands of timber as they had been in the habit of doing in former years.

Carillon.—At this station the bottom timbers of the slide, in places, required renewal and the apron fastenings, where defective, were made good. The fences of the service ground near the end of the dam were repaired and strengthened.

Long Sault Rapids (below Grenville).—At a place known as 'Trois Roches reef,' the running of timber had become dangerous owing to the construction of the stone piers of the Great Northern Railway bridge. To improve matters the course immediately above the bridge was straightened and made wider for high water operations; and for medium pitch, a new channel was opened close to the island, to avoid the heavy swells that had a tendency to break up the bands into which the rafts are subdivided for passage at this place.

Hull or North Chaudière.—The usual repairs were executed at this station in the maintenance of the booms and fastenings; the bulkheads and hoisting gear; the fences and store houses and the planking and side piers of slide.

Ottawa or South Chaudière.—The side piers of the slide were raised and repaired; the bulkhead, boom stays and platforms were renewed, and the store houses, fences, and sheds maintained in a state of efficiency.

Chats.—The bottom of the slide was repaired with new sheeting; a new cross sill for bottom of apron at outlet of slide furnished; new apron chains put in position and a number of new fingers set in the apron to replace those worn out. In the canal leading to the slide, the timber glances were patched, where gouged out, and two new piers built to support guide boom immediately above the slide entrance.

Cheneaux.—For the capstan platform used in opening and closing the trip boom, two new spindles, with iron mountings complete, were supplied as a more reliable equipment for this purpose than the worn out wooden ones abandoned.

Mountain.—The bottom of the slide, near the outlet had become sagged, which necessitated taking up the flooring and raising some of the cross sills; while in other

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cases wedge pieces were laid on top of sills to bring the bearings to grade. The spaces between the sills were filled with stone and in relaying the floor, damaged portions were rejected and new material substituted.

Calumet.—Below the outlet of the third slide, a quantity of stone from an old collapsed pier lodged in the crib channel and as it formed an obstruction its removal was imperative. The apron at the foot of the second slide had some of its broken fingers repaired and strengthened by splicing and spiking on maple plank. A more solid foundation was laid for waste gate in side dam between first and second slides. Below the outlet of the third slide, a glance pier, which had been built in 1899, for the purpose of keeping cribs off a rugged shore, was extended for a distance of 186 feet; it is 12 feet high, with an average width of 8 feet, and stone filled. A portion of the old controlling dam, near this place, was removed and the side pier of the slide raised by an addition of timber and stone. New stop-logs were provided for the waste gates and bulkheads and a layer of gravel applied to the dam at the head of the second slide for the purpose of stanching it and preventing leakage.

Des Joachims.—At this station the works had several defects, due mainly to natural decay, ice shoves, and the action of the spring floods. The repairs executed may be described as follows:—Plank was hewn and laid in bottom of slide to replace that carried away or worn too thin; stop-logs were furnished for waste gate at north side of slide, to regulate the flow of water, these logs being set in gains of timber well braced in rear; the bulkhead of slide was renewed, a new crab frame built and hoisting apparatus erected; stop-logs were procured for the slide and at the corners of entrance piers, posts &c., where abrasion or decay had weakened the structures, reinforce patches were planted; the tops of four support piers which had been displaced, were rebuilt and a boom 576 feet in length was made and placed in position to guide the cribs to the entrance of the slide. The lower section, 85 feet in length, was constructed as a stiff boom and the remainder in sections, joined by $\frac{7}{8}$ inch chains.

Rocher Capitaine.—Near the head of the rapid bearing this name, there is a dangerous reef known as the 'Sickle Rocks,' which at certain stages of the water, proves a menace and impediment to the safe running of cribs of square timber through the intricate and difficult channels below. A commencement was made and as much as possible of the reef blasted off, at last season of low water, but time did not permit of the complete removal of the obstruction, which, however, will be accomplished at the proper season.

TRIBUTARIES OF THE OTTAWA.

Gatineau River.—At the main boom, near the mouth, the station house, store houses and fences were maintained in a state of repair. The support piers of the boom where there was a tendency to undermining by the action of the currents, were protected by depositing stone at their bases; the upper timbers of some of the piers having become decayed, were removed and replaced by new materials which were stone-filled; the landing places were protected by timber facings; the bridges were repaired in their coverings and abutment piers; the booms strengthened and made secure by the use of new cleaves and chains, and precautionary measures adopted to guard against ice shoves in the spring.

Madawaska River.—The retaining boom at the mouth of the stream was taken out of the water and overhauled; worn ends of sticks were sawn off and new holes bored in sound timber for coupling chains; new chains, screw-bolts and washers were substituted for those found to be unserviceable, and the boom generally improved in its various parts.

Arnprior.—A covering of 3-in. plank was laid on top of guide boom leading to slide; weak portions of this boom were reinforced by splice pieces and extra chains.

Flat Rapids.—Certain minor repairs were effected in the facing and timbers of dam, and a supply of necessary material, such as timber and planking deposited on the bank of the river for use in rebuilding the structures after the timber-running season.

Calabogie Lake.—A quantity of stone was piled in view of keeping up the filling of the piers as occasion required.

SESSIONAL PAPER No. 19

High Falls.—The boom was hauled out of the water; a joint 68 feet in length renewed; maple cross ties inserted, and the whole bound together horizontally and vertically with 1½-in. screw-bolts, after which a covering of 3-in. pine plank was laid on. The station house here was also thoroughly repaired.

Chain Rapids.—With the view of changing the direction of the current and avoiding a troublesome eddy at the outlet of the old slide, an addition of about 260 feet in length was constructed on a curve, which had the effect of discharging the logs and timber into a channel where they could be more easily controlled. This new portion of the slide was sheeted with maple and elm plank 4 inches thick.

Coulonge River.—The slide at High Falls, about 3,000 feet in length, was, from time to time, strengthened and kept in running order by the removal of broken and decayed posts, braces, plank and timbers for which new materials consisting in part of pine, hard maple and oak had to be substituted; and it was also found necessary to raise the slide to proper grade where it had sagged on top of a somewhat elevated substructure. The boom support piers, above the slide entrance, had their faces and corners protected by new sheeting; the foot-boards of the slide overhauled; a frame structure erected as a signal station for watchman regulating the run of logs in the slide, and a clearance made of shrubs and brush from the side hills where the view was obstructed. A storehouse and blacksmith shop were built at this station for the purpose of facilitating repairs in cases of emergency.

Black River.—The works on this stream received the ordinary attention by way of repairs, and were satisfactorily operated in the early part of the season; but on June 13 last, a jam of saw-logs occurred in the slide, and it was damaged at a point 115 feet from the outlet and extending up the steep grade a distance of about 200 feet. At the lower end, the sills were all torn away for about 50 feet, and in the remaining portion the sides were gone, the bottom generally being left intact. No time was lost in making good the damage, as the men worked overhours, in order to have the slide available at the earliest possible moment. The alignment of the slide was altered somewhat, to reduce the curvature as much as practicable.

Petewawa River.—At Cedar Lake both the flat and pier dams south of bulkhead were rebuilt. The former, 32 feet long, adjoins the bulkhead, and from the outer end of it the pier dam runs 172 feet in a southerly direction. Both of these works had become very much decayed, so much so that it was not feasible to patch the old timbers. The sheeting on all the dams at this place was partially renewed; the corners of sluiceways repaired with new planking, and on corner of stop-log checks an angle iron was attached to prevent wear. New stop-logs were provided for the regulating bulkhead in connection with sluiceways and the hoisting appliances adjusted.

At Sault Rapids, about 1½ miles below Cedar Lake, a portion, 102 feet in length, of the glance dam on the south side of the river was repaired, and the running of logs in the rapids improved by the blasting out of projecting rocks.

At the other stations on this tributary, the ordinary casual repairs were made by the staff on the works.

On May 2 last, when the river was at flood height, a section, 130 feet in length of the dam at head of third chute slide was carried away. This dam, situated about two miles from the mouth of the stream, was built when the improvements on the lower Petewawa were consummated upwards of 44 years ago. Doubtless the rock-bolts in the foundation had been so weakened by corrosion as to be unequal to the pressure of high water. The logs that arrived after the accident had to be passed over the chute, as reconstruction could not be done at the prevailing pitch of water; but at the proper season the gap will be closed.

Dumoine River.—The works on this river were kept in repair during the season. An occasional break in the planking or side supports of the slide was made good by the staff on the ground from materials held in reserve; but no serious damage was done to the improvements, either by passing timber or action of high water during the period covered by this report.

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OTTAWA OR SOUTH CHAUDIÈRE STATION.

At this place, the work of changing the position of the bulkhead and rebuilding and raising side piers of slide was carried out. The old apron, bottom sills, and flooring were all removed and a new side pier about 200 ft. long constructed.

The drives of 1901, for the most part, were successfully handled and as the water, in the spring of 1902, was at a most favourable pitch for driving and remained high during a later period of the season, square timber and saw-logs moved freely and were well under way at the time of closing this report.

The following statement, compiled from information furnished by the collector of revenues in your department, shows the quantity of the various description of timber, &c., using these works and the revenue accrued thereon, for the fiscal year ended June 30, 1902 :—

	Pieces.
Square timber.....	15,834
Saw-logs.....	3,287,731
Boom and dimension timber.....	69,871
Cedars.....	89,567
Railroad ties.....	657,281
Fence posts.....	389,089
Total.....	4,509,373

Also 24,083⁵/₈ cords pulpwood.
Revenue accrued on the above was \$37,923.23.

I have the honour to be, sir,
Your obedient servant,

GEO. P. BROPHY,
Superintending Engineer, Ottawa River Works.

SESSIONAL PAPER No. 19

STATEMENT showing Expenditure on Works—Ottawa River and Tributaries—for Repairs and Extraordinary Repairs for Fiscal Year ended June 30, 1902.

Name of Works.	Province.	Electoral District.	Expenditure from July 1, 1901, to Dec. 31, 1901.	Expenditure from Jan. 1, 1902, to June 30, 1902.	Expenditure from July 1, 1901, to June 30, 1902.
ORDINARY REPAIRS.			\$ cts.	\$ cts.	\$ cts.
<i>Ottawa River, Main Stream.</i>					
Long Sault and St. Vincent de Paul.....	Ontario and Quebec.....	Counties of Argenteuil, Prescott and Laval.....	265 25		265 25
Carillon station.....	Ontario.....	County of Prescott.....	35 37	7 33	42 70
North Chaudière station.....	Quebec.....	District of Wright.....	167 75	396 27	564 02
South " ".....	Ontario.....	City of Ottawa.....	272 74	1,245 77	1,518 51
Chats " ".....	" ".....	N.R., County of Lanark....	161 00	182 63	343 63
Cheneaux " ".....	" ".....	S.R., County of Renfrew....		27 94	27 94
Mountain " ".....	Quebec.....	County of Pontiac.....	146 00		146 00
Calumet " ".....	" ".....	" ".....	425 50	2,375 55	2,801 05
Joachim " ".....	" ".....	" ".....		1,753 72	1,753 72
Rocher Capitaine " ".....	" ".....	" ".....		445 14	445 14
			1,473 61	6,434 35	7,907 96
<i>Tributaries of Ottawa River.</i>					
Gatineau River.....	" ".....	District of Wright.....	167 69	1,219 00	1,386 69
Madawaska " ".....	Ontario.....	S.R., County of Renfrew....	1,657 16	1,097 63	2,754 79
Coulonge " ".....	Quebec.....	County of Pontiac.....	239 46	1,731 58	1,971 04
Black " ".....	" ".....	" ".....		421 05	421 05
Petewawa " ".....	Ontario.....	N.R., County of Renfrew, Nipissing.....	1,592 39	544 43	2,136 82
Dumoine " ".....	Quebec.....	County of Pontiac.....	11 23	189 00	200 23
			3,667 93	5,202 69	8,870 62
<i>Bridges, &c—</i>					
Chaudière Slide Bridges.....	Ontario.....	City of Ottawa.....	1,691 39	564 64	2,256 03
Union Bridge.....	Ontario and Quebec.....	City of Ottawa and District of Wright.....	52 65	94 66	147 31
Hull Slide Bridge.....	Quebec.....	District of Wright.....	1,377 52	17 83	1,395 35
Hull Roadway.....	" ".....	" ".....	907 62	364 89	1,272 51
			4,029 18	1,042 02	5,071 20
Portage du Fort Bridge.....	Ontario.....	N.R., County of Renfrew & County of Pontiac.....		10 63	10 63
EXTRAORDINARY REPAIRS.					
<i>Ottawa River—</i>					
South Chaudière Station.....	Ontario.....	City of Ottawa.....	1,626 48	3,534 47	5,160 95
Joachim Bdge. approaches.....	Ontario and Quebec.....	N.R., County of Renfrew & County of Pontiac.....	6,675 24	16,235 13	22,910 37
		Grand total.....			49,931 73

D. SCOTT,

Accountant, O.R.W.

REPORT OF THE ST. MAURICE RIVER WORKS.

(By F. X. T. BERLINGUET, SUPERINTENDING ENGINEER.)

RESIDENT ENGINEER'S OFFICE, THREE RIVERS, October 11, 1902.

EUGÈNE D. LAFLEUR, Esq.,
Acting Chief Engineer,
Department of Public Works, Ottawa.

SIR,—As requested in your letter No. 1924, I have the honour to submit the following report on the St. Maurice works for the fiscal year ended June 30, 1902.

The fluctuation of the water level on the St. Maurice river during the time of the floating of the logs of the commercial season of 1901 has been almost null, except at the beginning. During the month of April the flood occurred a few days earlier than usual, but did not exceed 20·2 feet on gauge used for the observations at Pte. Magdeleine at St. Jean des Piles on the 38th mile on the river. The water then receded to 14 feet. This was followed by a second rise, which went up as far as 18·8 feet. This took place about April 29. It then started to recede and continued to do so until June 7, when it reached 8·7 feet. This was followed by a third rise, which went up as far as 12·3 feet on June 11. The logs were then too far behind in the tributaries to be helped by this rise. The water then started to recede until the 22nd of the same month, and was followed by a small rise of a few inches, and started again to recede for the fourth time, and reached the lowest water recorded on July 3, and continued to recede until September 29. It was then 10½ inches below the zero of gauge or about 3 feet lower than the lowest water recorded.

The rains which occurred in October and November had very little effect on the St. Maurice, and remained much below the water level previously recorded.

The mean fluctuation of the water level for each month during the working season for the last seven years has been as shown in the following table of elevation of mean low water, in feet and tenths above zero of Grandes Piles gauge, for each month of the working season, August, 1892, to November, 1901.

The zero of the Grandes Piles gauge corresponds to 298·39 feet above the zero of Three Rivers gauge connected with the St. Lawrence geodetic levelling.

Year.	April.	May.	June.	July.	August.	September.	October.	November.
1892.....					7·5	3·8	4·7	5·1
1893.....	3·9	12·7	10·4	6·1	4·6	5·0	4·1	3·6
1894.....	8·5	13·2	8·8	7·6	5·3	4·2	7·5	8·1
1895.....		14·0	9·2	5·9	6·3	5·1	4·1	4·4
1896.....	9·7	13·3	7·7	6·4	3·4	2·6	3·3	8·5
1897.....	6·4	14·7	9·4	6·7	5·3	4·4	3·1	2·7
1898.....	9·5	10·9	9·0	7·4	5·2	5·0	5·8	6·7
1899.....	5·3	15·0	9·9	7·5	5·1	5·1	9·7	5·7
1900.....	6·3	11·6	7·5	9·5	5·8	4·6	6·6	6·5
1901.....	10·6	13·3	9·0	4·2	1·9	0·2	1·5	2·6
Average for 1892-1901.....	7·6	13·2	8·8	6·8	5·1	4·0	5·0	5·4

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The 'drives' of 1901 have been very difficult owing to the scarcity of water, to an alarming extent. As already reported in my annual report of 1901 the spring flood lasted only a very short time, and a great part of the logs were left in the tributaries, owing to the constant receding of the water, which is partly attributed to the deforestation of that region.

Some artificial means must therefore be taken to compensate and regulate the flow of the main river by constructing dams on the large tributaries flowing into the St. Maurice for the storage of water to be used in reducing the spring flood, and to be afterwards used when the spring flood is over. By so doing the lumbermen could have their logs a month sooner and would avoid the delay of waiting after the spring freshet is over to send their logs on the main river, and sufficient water would be retained to be used with advantage to continue the floating of the logs without any interruption.

When the water was at its lowest pitch, the foundations of the various structures were examined and repairs commenced. The work done under this head may be described as follows:—

Pointe a Trudel Booms.—On the 40th mile of the St. Maurice river, 1,412 lineal feet of booms, also three mooring piers, were examined and put in good condition for the coming season.

The area of the space formed by the said booms and the western shore is 520,000 square feet, and can retain 62,000 logs per layer. At the end of the fiscal year, ending June 30, 1902, 210,000 logs were retained in said booms.

Pointe a Madeleine Booms.—On the 39th mile, 2,588 lineal feet of booms, three to five feet in width, also nine mooring piers were examined and put in good condition.

The area of the space formed by the said booms and the western shore is 2,920,000 square feet, and can retain 292,000 logs per layer. At the end of the fiscal year, ending June 30, 1902, 275,000 logs were retained in said booms.

St. Jacques des Piles Booms.—On the 38th mile from the outlet, 2,176 lineal feet of five to six ply booms, also seven mooring piers were examined and put in good condition. A number of boom chains were supplied. Stone ballast was put in the piers where necessary.

The area of the space formed by the said booms and the eastern shore is 2,210,000 square feet, and can retain 221,000 logs per layer. At the end of the fiscal year, ending June 30, 1902, 245,000 logs were retained in said booms.

Petites Piles Booms.—On the 35th mile on the St. Maurice, 3,297 lineal feet of three-ply booms, 1,109 feet of four ply booms, and 202 feet five ply booms, also nine mooring piers were examined and put in good condition. A number of boom chains were supplied. Stone ballast was put in the piers where necessary.

The area of the space formed by the said booms and 'Ile Arthur,' 'Ile Leblond' and western shore is 6,655,000 square feet, and can retain 606,000 logs per layer. At the end of the fiscal year ending June 30, 1902, 110,000 logs were retained in said booms.

Pointe à Paquin Booms.—A new sorting boom was built during the winter of 1901–02, with the co-operation of Mr. P. E. Parent, engineer in charge of the hydrographic survey of the River St. Lawrence.

The new assorting boom was built according to a plan submitted with a report dated November 5, 1901.

Eight mooring piers (No. 1 and 2 : 4,160 c. ft. ; No. 3 : 6,020 ; No. 5 : 40 ft. x 50 ft. x 37 ft. = 38,930 c. ft. ; No. 6 : 40 ft. x 40 x 37 ft. 9 in. = 44,825 c. ft. ; No. 7 : 40 ft. x 50 ft. x 65 ft. = 80,287 c. ft. ; No. 8 : 40 ft. x 40 ft. x 38 ft. = 41,261 ; No. 9 : 40 ft. x 40 ft. x 53 ft. = 67,308 c. ft.) are in use of which four new ones (Nos. 5, 6, 7 and 8) were built together with a jam pier (No. 9). The crib built measures 282,791 cubic feet. The construction of 2,065 feet of five-ply booms were also built.

Although the Pointe à Paquin boom, on the 33rd mile of the St. Maurice, was merely built to facilitate the distribution of the logs at Grand Mère with those of Shawinigan and Three Rivers, it had to be used as storage boom, owing to the excess of logs which came down with a sudden rise of six feet, which occurred during the floating of the bulk of logs made for this commercial season.

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The said rise commenced on May 24, 1902, when the water was still at 11 feet 5½ inches above low water level, and reached its maximum height 17 feet 5½ inches on May 30, 1902.

On May 27, the current being too swift for the Laurentide Pulp Co's. booms to hold logs, the sluicing had therefore to be discontinued in the government's booms at Pointe à Paquin. The consequence was, that in a few hours. the government's booms at Pointe à Paquin and those at Grandes Piles had more logs than they could hold, and the result, as was already reported, the strongest chains used gave way and from thirty to forty thousand logs went into the lower booms, this increasing the strain on these booms, and putting in danger the logs already retained in these booms.

Fortunately the water did not rise as high as that of 1873, and only guide booms gave way, so that all the logs were retained in the St. Maurice's booms, with the exception of very few logs which went into the St. Lawrence, and those logs passed over and under the booms.

As a rule the lumbermen were accustomed to wait until after the north freshets before sending their logs afloat on the main river, but in doing so last year, they failed to get their logs, expecting a rise which did not come, so that the consequence was that a great number of logs were left in the ice, and prevented the constant working of the mills, and which increased their expenses to a considerable amount.

The lumbermen have therefore taken upon themselves this year to float their logs on the main river during the north freshets as there was very little indication that this rise would soon take place.

The capacity of the booms is scarcely large enough to hold more than one-third of the logs made this year, so that each boom had more logs than it could hold.

To obviate this disaster which is very ruinous, not only to the company who loses their logs, but to the district in general, it will require to increase the storage capacity of the booms above Grand Mère, and at the places where the logs offer less pressure on the booms.

Four thousand two hundred and thirty-eight feet of five-ply booms are in use at Pointe à Paquin. The area of the space between the two booms and which forms a point is 780,000 square feet and can hold 78,000 logs, and which can easily be sluiced in a days work by the twenty-six sluicing gaps made for that purpose.

Pointe à Traham Booms.—On the 33rd mile of the St. Maurice river, 3,200 lineal feet of two and three-ply booms were examined and put in good condition.

The area of the space formed by the said booms and the western shore is 1,755,000 square feet, and can retain 175,000 logs. At the end of the fiscal year ending June 30, 1902, 50,000 logs were retained in said booms.

Rapid des Hêtres Booms.—On the 26th mile, 600 lineal feet of two and three-ply booms and one anchor pier were examined and put in good condition.

The area of the space formed by the said booms and the western shore is 640,000 square feet, and can retain 64,000 logs. At the end of the fiscal year, ending June 30, 1902, the boom was empty.

Pointe Marchessault Booms.—On the 24th mile, 1,200 lineal feet of five-ply booms and three piers were examined and put in good condition.

The area of the space formed by the said booms and the eastern shore is 480,000 square feet, and can retain 48,000 logs. At the end of the fiscal year ending June 30, 1902, 60,000 logs were retained in said booms.

Pointe à Bernard Booms.—On the 22nd mile, 4,200 lineal feet from three to five-ply booms, also fifteen mooring piers were examined. A number of chains were supplied. Stone ballast was put in the piers where necessary.

The area of the space formed by the said booms and the western shore is 1,600,000 square feet, and retain 160,000 logs per layer. At the end of the fiscal year ending June 30, 70,000 logs were retained in the said booms.

Ile Melville Booms.—On the 21st mile, 448 lineal feet of four-ply booms and 217 lineal feet of three-ply booms were examined and put in good condition.

The middle channel formed at the head of Shawinigan Falls by Melville island western shore is closed by the above mentioned booms, and can retain 80,000 logs. At the end of the fiscal year ending June 30, 1902, 15,000 logs (Belgo) were retained in the said booms.

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Shawinigan Slide Booms.—On the 20th mile, 1,371 lineal feet of five-ply booms, 768 feet of four-ply, 263 feet of three-ply were examined and put in good condition.

On September 27, 1901, the work was commenced for the lowering of the crest of the dam and slides by $40\frac{1}{2}$ inches, also deepening the channel through the rock for a distance of about 200 feet, to allow the passing of the logs through the slide during the extraordinary low water. All the logs (45,000) detained above the slide were then sluiced.

A new gauge was placed at the slide on February 15, 1902. The zero corresponding to the sill of the slide being 3.2 feet lower than the gauge placed on April 10, 1901, and corresponding to 176.9 feet of the Shawinigan Water and Power Co.'s gauge.

Ile aux Tourtes Booms.—On the 17th mile, 11,805 lineal feet of one to seven-ply booms were examined and put in good condition, and were left stretched for the winter to close the eastern channel above the island and the western channel below the said island.

The area of the space formed by the said booms can retain 200,000 logs. At the end of the fiscal year ending June 30, 1902, 200,000 logs were retained in said booms.

Pointe à Lambert Booms.—On the 4th mile, 541 lineal feet of five-ply booms and 1,750 feet of four-ply booms were examined and put in good condition.

The area of the space formed by the said booms and the western shore is 700,000 square feet, and can retain 70,000 logs. At the end of the fiscal year ending June 30, 1902, 25,000 logs were retained in said booms.

Cap aux Corneilles, Eastern Booms.—On the 3rd mile, 1,246 lineal feet of eight-ply booms, 2,114 feet of six-ply booms, 294 feet of five-ply booms, also twenty-three mooring piers were examined and put in good condition. Chains were supplied and stone ballast was put in the piers where necessary.

The area of the space formed by the said booms and the eastern shore can retain 200,000 logs. At the end of the fiscal year 85,000 logs were retained in said booms.

Cap aux Corneilles, Western Booms, Three Rivers Sluicing Gate.—On the 2nd mile, 108 lineal feet of seven-ply booms, 777 feet of six-ply booms, and 402 feet of four-ply booms, also seven mooring piers were examined and put in good condition.

At the end of the fiscal year about 18,000 logs were in the booms.

Eastern and Ile St. Quentin Booms.—At the outlet 1,070 lineal feet of seven-ply booms, 1,300 feet of six-ply booms, 3,121 feet of five-ply, 4,750 feet of four-ply, 1,851 feet of three-ply booms, and 4,567 lineal feet of two-ply booms, also forty-three mooring piers were examined and put in good condition.

The statement furnished by the collector of slide and boom dues shows that 1,352,182 logs have passed the government works during the season 1901.

I have the honour to be, sir,

Your obedient servant,

F. X. THOS. BERLINGUET,

Superintending Engineer.

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REPORT OF THE TRENT AND NEWCASTLE DISTRICT WORKS.

(By S. CLEGG, SUPERINTENDING ENGINEER.)

PETERBOROUGH, Sept. 29, 1902.

EUGÈNE D. LAFLEUR, Esq.,
Acting Chief Engineer,
Department of Public Works, Ottawa.

SIR,—In compliance with the request in your letter No. 1932, dated July 8, 1902, I have the honour to submit the following report on the work under my charge on the Trent river and the waters tributary to it for the year ending June 30, 1902. These works extend from the Bay of Quinté on the south to Balsam lake on the north.

HASTINGS SLIDE.

The slide at Hastings was rebuilt, had to put in new joist for the flooring and build a new end in slide 35 x 12 ft. x 6 ft. high, put new floor 35 x 51 ft. 6-in. thick of maple, built a new side pier 11 ft. by 50 ft. and sheeted slide on sides with 2-in. white oak. Repaired stop-log sill and put in new stop-logs 12-in. x 14-in. x 38 ft. long, put new sheeting on the face of slide above the stop-log sill.

LITTLE LAKE PETERBORO'.

The boom here is about $\frac{1}{2}$ mile long. It was taken off in the fall and put in winter quarters, replaced in the spring and some new chains supplied and some minor repairs done.

KATCHAWANNOE LAKE.

The boom from Young's Point to Lakefield is about $4\frac{1}{2}$ miles long, was overhauled and some new chains supplied.

LOVESICK LAKE.

The boom had to be overhauled and some new chains supplied.

DEER BAY.

The boom was broken and some of it carried away with the ice. This was repaired and the new pieces put in.

BUCKHORN.

The log channel at the foot of the slide was cleaned out and a lot of large boulders removed. This work made good running for the logs. The two stick glance booms at top of the slide were broken and had to be taken out and repaired.

FENELON FALLS.

The booms were placed in position and some minor repairs made. The platform of the timber slide was repaired, some new stringers and new flooring put in.

SCUGOG RIVER, LINDSAY.

The work of dredging in the Scugog river at Lindsay was commenced on June 7 by Mr. A. L. Davis' dredge *Arthur* and up to June 30 had removed a lot of material and greatly improved navigation.

I have the honour to be, sir,
Your obedient servant,

S. CLEGG,
Superintendent.

BRIDGES AND ROADS.

It may be stated that, in the older provinces of the Dominion, the federal government has confined itself, as a rule, to take under its exclusive control and make provision towards the construction and maintenance of important interprovincial road bridges and bridges required across waterways.

In the sparsely-settled districts of the North-west Territories, the government of Canada has undertaken to provide for the erection and maintenance of ordinary road bridges over large streams; bridges that are urgently needed to afford uninterrupted communication through trails and highways of national importance, which neither the municipalities to be more immediately benefited by the structures, nor the territorial authorities most directly concerned, could be expected to erect and maintain at their sole expense.

During the last fiscal year, works have been executed on the following bridges:—

OTTAWA BRIDGES.

LAURIER BRIDGE.

This bridge is a new steel structure erected on the site of the old Maria street timber bridge, spanning the Rideau canal and passing above the Canada Atlantic Railway tracks, forming a connection between Maria and Theodore streets.

It was built in 1900 and 1901 under three separate contracts, the work of construction having been awarded separately for the masonry, the steel superstructure, and the permanent concrete flooring.

These contracts did not include stone block pavement, sidewalks and filling of approaches at both ends, which was done partly by day's labour by the department and partly by agreement with the contractors as extras to the contracts.

The Laurier bridge has a total length of 344 feet from abutment to abutment, a total width of 54 feet including two sidewalks, each 8 feet wide, and is carried by two masonry piers, two abutments and twenty-four post piers founded on a timber and concrete grillage on top of piles.

It is a deck bridge composed of a system of girders supported on columns for the portion over the railway tracks, and on four arch ribs for the portion over the canal.

The flooring which is supported by these girders consists, for the roadway, of a system of wire cloth arches stiffened by 'woven in' steel rods sprung between floor-beams and covered with cinder concrete. The sidewalks consist of twisted steel bars hooked to girders and connected together with light steel bands, the whole covered with cinder concrete.

The roadway bed is formed of stone blocks and the sidewalks finished with granolithic concrete coloured red.

The west approach consists of an earth and stone embankment about 350 feet long, built to a grade of 5 per cent.

The east approach is 150 feet long built also to a grade of 5 per cent.

This bridge was opened to traffic on July 1, 1901.

During the last fiscal year 560 lineal feet of granolithic sidewalk, 8 feet wide, was built on the north side of the west approach, and the bridge railing was continued on the south side of the same approach for a length of 118 feet, and on the north side for a length of 94 feet. Some 141 square yards of sandstone block pavement, which had been laid on loose filling at both ends of the bridge, were relaid on a concrete bed, and 55,000 sandstone blocks required for permanently paving the whole of the west approach were purchased. This will be done as soon as the embankment has attained full settlement.

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The bridge and approaches are provided with seventeen lamp posts carrying thirty-four 32 c. p. electric incandescent lamps, and the wiring for this was done at the beginning of the fiscal year, arrangements being made with the Ottawa Electric Company to supply the current.

The sums of money paid during the fiscal year amount to \$30,424.26, being for work above mentioned and in payment of some accounts held over from the previous year.

Total amount paid up to June 30, 1902, on account of this bridge is \$106,827.35, from which must be deducted however a sum of \$17,615 paid by the Canada Atlantic railway as a portion of their contribution to the cost of the bridge, making \$89,212.35 expended by the government.

The Canada Atlantic Railway Company have yet to pay a few thousand dollars more as their share of the cost of the bridge, as a final settlement has not yet been made with them.

REPAIRS OF BRIDGES AND APPROACHES AT OTTAWA AND HULL.

The work of paving the Chaudière bridges over the slide and hydraulic channels and approaches to Albert and Victoria islands was completed and this thoroughfare was opened for traffic about the middle of July, 1901. The railings and exposed parts of steel work received a coat of metallic paint similar to that used on the Laurier bridge in this city. The roadway was scraped and cleaned during the summer months when required, as was also that of the Union bridge. The causeway leading to Hull was maintained and cleaned, and a temporary board fence erected at the northerly end of Union bridge, where the sidewalk and guard rails were destroyed by fire. Portions of the granite pavement which had become uneven were taken up and relaid to grade. The paving of the Hull slide bridge was also finished and the structure opened to the public on August 17, 1901.

The roadway of this bridge is similar to that of the Chaudiere bridges, being of Nepean sandstone laid on a concrete foundation and grouted.

The superstructures of these bridges were examined periodically and such adjustments made to their parts as were found necessary.

ONTARIO AND QUEBEC.

DES JOACHIMS.

Approaches to Interprovincial Brtdges at Rapides Des Joachims.

The work in this connection which was commenced in August, 1901, was completed last spring and the road approaches were available for traffic when the bridge superstructures was finished. Owing to the very rough state of the bridge environs and the heavy fills necessary to reach the abutments, the construction work was comparatively slow and expensive. To reach the locations, temporary or service bridges and tramways had to be constructed over the water course and ravines. The length of the approach on the Quebec main shore is 1,375 feet, of that on the island between the two bridges 875 feet and of the Ontario part 2,050 feet, making a total of 4,300 feet exclusive of the bridges proper, a very large portion of which consisted of rock, blasted from the side hills, and sand or gravel laid in the embankments after a considerable haul. A portion of the retaining wall or riprap work adjoining the abutments on the Quebec side having had its foundations flooded in the spring, gave way and will have to be rebuilt.

DES JOACHIMS BRIDGE.

The village of Des Joachims is on the northern shore of the Ottawa river, in the county of Pontiac, 45 miles above Pembroke and 130 miles from the city of Ottawa.

In 1885, the Department of Public Works with the assistance of the local governments of the provinces of Ontario and Quebec, constructed a wooden bridge across the Ottawa river. This bridge fell in 1898, on account of its decayed condition. In 1900,

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the department decided to replace the wooden bridge by a steel structure with stone masonry piers and abutments at the site of and over the timber slide, about one-third of a mile above the site of the old bridge. As the Ottawa river at this place is divided into two channels by an island, two structures were necessary and were built under separate contracts.

The bridge over the south channel consists of three rivetted through spans, one of 227 feet and two shore spans of 100 feet each, over the north channel, the bridge consists of two rivetted through spans of 150 feet each.

The piers for the two structures are built of first-class masonry and the abutments of second class; Rathbun's 'Star' cement was used for the mortar. All the masonry structures rest on solid rock which was found near the surface.

The superstructures were built under contract by the Dominion Bridge Company, all the steel used was tested for a tensile strength of 60,000 lbs. per square inch. One coat of paint was applied before leaving the shop and two coats after erection. The work on the masonry was commenced in the month of February, 1901, and the whole bridge was satisfactorily completed in April, 1902.

The cost of the bridge was, for masonry, \$21,950, and for superstructure, \$29,537.50 making a total of \$51,487.50.

Total expenditure during fiscal year, \$63,265.07.

GRAND RIVER BRIDGE.

Grand River Bridge is situated at York, Haldimand county, and was erected by the government in 1890-91. The superstructure is composed of four spans of iron; the two end ones being 106 feet, 4 inches in length, and the two inner ones 106 feet, 2 inches each, total length of iron superstructure, 425 feet, resting upon three stone piers and two abutments built of second-class masonry. There are two approaches, the one on the east side 50 feet long.

Authority was given on July 10, to expend the sum of \$1,000 to repair the approaches and flooring. Work was commenced on August 1, and completed on the 31st of the same month.

Expenditure for fiscal year, \$993.97.

PORTAGE DU FORT.

Portage du Fort is on the north shore of the Ottawa river, in the county of Pontiac, 60 miles above the city of Ottawa.

In 1898, the wooden bridge built by the government some years previously, across the Ottawa river at Portage du Fort, fell down on account of its decayed condition, and communication between the provinces of Ontario and Quebec, at that place, had to be established by means of row-boats.

In 1899, the department decided to build a steel bridge with stone masonry piers and abutments, at a place about one third of a mile below the site of the old bridge.

In February, 1900, a contract was entered into for the construction of the substructure, and another with the Berlin Bridge Company, for the superstructure. The new bridge consists of one rivetted through span of 300 feet and two shore pony spans of 50 and 30 feet respectively. The piers are built of first-class masonry and the abutments of second class, the whole resting on solid rock.

All the steel used in the superstructure was tested for a tensile strength of 60,000 lbs. per square inch, one coat of paint was applied before leaving the shop and two coats after erection.

The approaches on both sides of the river were built by the department by day labour at a cost of \$3,562.04, the cost of the masonry was \$6,725, and that of the superstructure \$13,742.86, making a total of \$24,029.90.

Expenditure during fiscal year \$16,497.36.

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MANITOBA.

MORRIS BRIDGE.

In compliance with instructions a survey and plan of the proposed site of the Morris bridge, also sketch of bridge, estimate of cost, &c., were made.

Morris is situated 41 miles south of Winnipeg, also in the county of Provencher, and is one of the important towns along the banks of the Red river, south of Winnipeg.

It is situated on the boundary line of the municipalities of Montcalm and Morris.

It appears that the municipality of Morris would not be in a position to contribute its share to the construction of the bridge, and that the local government has declined to aid the project, so that the department would be expected to contribute the whole cost of the work.

ST. JEAN BAPTISTE PROPOSED BRIDGE.

A survey was made and plan of the site of the proposed St. Jean Baptiste bridge, also a sketch of proposed bridge, together with estimate of cost and report were made.

This proposed bridge is 47 miles south of Winnipeg by railway, and in the county of Provencher.

The village of St. Jean is one of the important villages along the banks of the Red river, and situated in the midst of a first class agriculture country, already well settled by people who claim to be the pioneers of the country, and who also argue that the officials of the government, that induced them to locate in the country, promised them the bridge spoken of at the time they landed in the country.

It also appears that the municipality of Montcalm would at present be willing to contribute one-third of the cost of a bridge, and it is stated that the provincial government of Manitoba have promised assistance to the proposed work to the extent of a like sum, that is, another third of the cost.

NORTH-WEST TERRITORIES.

BATTLE RIVER, BATTLEFORD.

A Howe truss bridge was built over the Battle river in 1890, and fell, by its own weight, in June, 1900. From 1900 to 1901, examination, survey, and estimates were made in order to replace the old construction by a new steel superstructure. In order to keep the traffic opened, during the design of such superstructure, a temporary bridge was erected in May, 1901.

After a thorough examination of the piers, at low water in October, 1901, they were found to be in a proper condition to stand the load of a superstructure for four or five years, if repairs be made at their weak points. A sum of \$2,000 was granted for these repairs, including a trestle approach on the north shore. Of that sum \$903.28 were expended during the months of December and January last.

All rotted timbers in the nose and body of the piers and abutment were replaced by new 12 x 12-inch sound timbers and the piers filled up with stone. Boiler plate was ordered and received to cover all exposed portion on the nose and side. Vertical pieces of 12 x 12-inch were placed in the piers, where the seats of the bridge would apply the greatest force and these were supported and surrounded by hand placed stones. The superstructure is being erected and will be completed about the first of November next. The lumber for the north approach has been purchased and the carpenters will have it completed for the opening of the bridge.

The temporary bridge, which is of the simplest kind, barely escaped being carried away by high water; it was afloat two days and required all attention and care to be saved.

Expenditure during fiscal year on main and temporary bridges \$2,650.45.

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BELLY RIVER BRIDGE.

The Belly river passes Lethbridge, which is situated on the railway of the Crow's Nest Pass, in southern Alberta. It is a treacherous mountain stream and presents, at the point under consideration, a powerful river. It flows from the Rockies and, in its descent, takes the St. Mary's, the Old Man's, the Kootenay and the small Belly river waters, and, after passing Lethbridge, empties into the south Saskatchewan river before reaching Medicine Hat. The bridge, over the Belly river was erected in 1892, at a point nearly two miles from the town of Lethbridge.

It consisted of four spans of 150 feet each and was this year partially destroyed by floods caused by the great volume of rainfall. On May 18, 1902, this stream rose to a level 5 feet higher than ever recorded. The entire trestle approach of 225 feet, the north abutment and one span of the bridge were swept away by the stream. Instructions were received to give communications to settlers on the south shore of the river as they were without food. A temporary bridge was undoubtedly the best method to adopt in order to make use of the remains of the old bridge. A scow was constructed 30 x 29 and a pile-driver was set and fixed to it. This pile-driver was obtained from the local government, and the construction of the temporary bridge was immediately started. The type of bridging proposed, consisted of bents placed at 16 feet centers of four braced piles, of 5 stringers over these bents at two and a half feet centers of 3-in. x 12-in. fir wood, forming a roadway 15 feet wide. On July 3, a flood of greater proportion than of May 18, carried away the north approach, all pile bents that had been driven into the bed of the river, another pier of the old bridge, another span of the same, and the scow and pile-driver. Under such circumstances, a ferry was the only temporary resource which could efficiently be placed at the site. It was impossible to obtain a cable in the Territories; one was ordered at Hamilton, Ont. After the towers were built, a new scow constructed, and the cable received, a ferry was placed in good working order. Traffic was opened on August 9.

A sum of \$706.93 was expended for these temporary works.

BELLY RIVER BRIDGE (STANDOFF).

Twenty miles due south of Macleod, near the Blood and Blackfeet reserves, there is a small post called Standoff. It is on a point of land formed by the Kootenay and Belly rivers.

The bridge was built in 1900 by the Territorial for the Federal government and consisted of a span (steel) 90 feet long, true bridge on wood and pile abutments. The bridge gang of the local government have renewed some of the planks in the floor, on their way north, when repairing the road culverts. The floods have done this bridge no damage; the river overflows the banks and its main course does not pass under the bridge. When the waters recede, the river takes the course under the bridge.

Expenditure during fiscal year, \$959.67.

EDMONTON TRAFFIC AND RAILWAY BRIDGE.

The bridge which crosses the north Saskatchewan river consists of three concrete piers and two abutments with steel superstructure. It is a combined rail and traffic bridge. The railroad company have laid its rails and are now preparing the grades on both shores. The only expenses incurred on the bridge during the year 1901-2, were to keep the logs, trees, and freshets from catching on the piers and forming a blocking point to the river. This bridge is the only permanent structure of its kind in the North-west, belonging to the government. The piers and abutments, which are the most difficult factors to deal with in such an undertaking, are examples and precedents for the use of cement in the North-west Territories and are cited by railroad companies and important builders.

Expenditure during fiscal year, \$6,643.68.

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LANGEVIN BRIDGE.

The Bow river, which passes Calgary, has its source in the Rocky Mountains, near Banff, and flows due west, joining the Belly river near Medicine Hat. From 82 miles above to Calgary, the river has a fall of 1,112 feet.

The Langevin bridge crosses the Bow River at the north east limit of the town of Calgary, and consists of three 'Howe' trusses of 150 feet each. In October, 1901, the flooring was in very poor condition. The first two spans south were a danger to the traffic; holes were repaired until authorization to replank that portion was given in December. The third span north had been repaired the previous year. This flooring consisted of a 3-inch plank running lengthwise of the bridge and covered by another board of 2-inch and placed crosswise.

The 3-inch plank was placed at the construction of the bridge in 1887, and was re-covered by 2-inch plank in 1894, the two floorings being poorly adapted. This old floor was entirely removed and a single floor of 3-inch plank was nailed in its place. The sum expended amounted to \$360.15.

Before the ice went out in the spring, authorization was obtained to place riprap about the two piers of the bridge. Eddies had made large holes at the head and back of both piers. It was impossible to obtain limestone or any stone of a hard, heavy nature. Large sand stones were purchased for \$7 per cord, of which 21 cords were placed about the piers. This has proved very effective during floods. This rip-rap and the labour in placing it, amounted to \$221.50. The entire structure has nearly lived its life through; it has well sustained the floods of this year.

Expenditure for fiscal year, \$586.05.

OLD MAN'S RIVER BRIDGE.

The Old Man's river, which flows through McLeod, falls into the Belly river about 15 miles east from that town. It has a gradual fall of 690 feet from Pincher Creek to Macleod, a distance of 30 miles.

The bridge was built in 1891, about two miles from the town, and consisted of a 'Howe' truss, with one pier and two abutments. Though rip-rap was placed about the pier, and other repairs had been made in January and February, the entire structure was washed out by the first spring flood of May 18. The trestle and embankment of the north approach are the only remnants of the old structure. A ferry had been placed as soon as communications allowed material to arrive. The mayor of Macleod opened telegraph correspondence with Regina and obtained from the local government the power to place such a ferry; the local chief engineer of public works shipped the cable necessary. The second flood of July 3 did considerable damage.

Expenditure during fiscal year, \$384.59.

YUKON ROADS.

HUNKER ROAD.

This road starts at Ogilvie's bridge, one mile from Dawson on Klondyke river.

Thirty-two miles of road were built partly on Dominion creek, and partly on Hunker creek.

The road was built with all the necessary culverts, bridges, ditches and corduroy and is of uniform grade. About 200 cubic yards of rock were blasted.

The road bed is 16 feet wide and composed of 27 bridges of 20 to 100 feet in length, 116 culverts of 4 x 16 x 6 feet, 11,300 feet in corduroy.

Expenditure, \$99,755.19.

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CONCLUSION.

During the past fiscal year, in the maritime provinces, a few new works have been constructed and the usual amount of dredging has been done, but the most important works executed were the repairs and improvements made to existing wharfs, piers and breakwaters; in the province of Quebec, extensive repairs were made to a number of wharfs and piers, and the dredging operations, including the construction and repairs to the dredging fleet, have been prosecuted with great vigour and with satisfactory results; in Ontario, the important improvements begun at Port Colborne, Goderich, Depot Harbour and other points will ultimately conduce to improvement in trade; the usual improvements have been carried on in Manitoba and British Columbia.

The expenditure made by this branch during the past fiscal year is as follows:—

Harbour works.....	\$2,277,767 62
Dredging.....	487,049 13
Other expenditure (staff and maintenance not included)	1,020,393 98
Total	<u>\$3,785,210 73</u>

I take great pleasure in thanking my staff for the efficient assistance rendered in the prosecution of the different works entrusted to them, and assure them that I fully appreciate their ability and promptitude in executing orders.

EUGÈNE D. LAFLEUR,

Acting Chief Engineer.

PART V

REPORT ON GOVERNMENT TELEGRAPH LINES

FOR THE

FISCAL YEAR ENDED JUNE 30, 1902

GOVERNMENT TELEGRAPH SERVICE.

DEPARTMENT OF PUBLIC WORKS,

OFFICE OF THE GENERAL SUPERINTENDENT,

OTTAWA, December 12, 1902.

F. GELINAS, Esq.,

Secretary, Department of Public Works.

SIR,—I beg leave to submit herewith my report on the Government Telegraph Service for the twelve months ended June 30, 1902.

This report, in accordance with those of the past few years, is prefaced by a list to the present date of the land lines and cables in operation, with data of lengths, year of construction, number of offices at present established, and an estimate of the traffic handled in each instance.

The usual tabular statements, giving lists of the offices, operating staff, &c., in the several districts are appended to the report ; likewise the tariff sheets showing the rates charged for messages on the several lines.

I have the honour to be, sir,

Your obedient servant,

D. H. KEELEY,

General Superintendent

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GOVERNMENT TELEGRAPH SERVICE.

Location of Lines.	Points connected.	Year.	Length of Lines.			Number of Offices	Yearly Average of Messages Sent.			
			Land Lines.	Cables.	*Total.					
			Miles.	K'ts.						
Newfoundland..	Port au Basque—Cape Bay.....	1883	14	14	2				
Nova Scotia....	North Sydney—Meat Cove (with loops).	1880-1902	167½	168½	15	3,000			
"	Across Bras d'Or Channel ...	1880	.....	1½					
"	" St. Ann's Harbour.....	1887	.....	1¼					
"	" Ingonish Harbour.	1887	1¼	23	2	50			
"	Meat Cove—St. Paul's Island.	1890	.....	20					
"	On St. Paul's Island	1890	3	.....					
"	Mabou—Meat Cove.	1887-1900	109	109	9	2,500			
"	Barrington—Cape Sable ...	1883	16	17¾	Leased.			
"	Across Bear Point Channel.....	1883	.....	1½					
"	" Lt. House Channel.....	1883	.....	1¼					
New Brunswick.	Chatham—Escuminac	1885	42	42	5	600			
	<i>Bay of Fundy System :</i>									
"	Eastport—Campobello.....	1880	1¾	44½	10	2,500			
"	On mainland Eastport.....	1880	1½	.....					
"	On Campobello Island..	1880	7½	.....					
"	Campobello—Grand Manan.....	1880	7¼	52¾	8	2,300			
"	On Grand Manan Island	1880	25½	.....					
"	Grand Manan—Cheney's Island.....	1890	.....	½					
"	On Cheney's Island	1890	¾	3¾	3			
"	Cheney's Island—Whitehead Island...	1890	.....	¾					
"	Partridge Island—Fort Dufferin.....	1900	.....	¾					
Quebec	Bay St. Paul—Chicoutimi	1881	92	132	7			
"	Branch St. Alexis—Anse St. Jean ...	1898	40	.....					
	<i>North Shore Line :</i>									
"	Murray Bay—Chateau Bay.....	1881-1901	1,028½	1090	52	15,000			
"	Across Saguenay River.....	1883	.....	1¼					
"	Bersimis to Manicouagan.....	1883	.....	12					
"	Manicouagan to Godbout.....	1883	26	22½			
"	Chateau Bay—Belle Isle.....	1901	.....	22½					
	<i>Quarantine System :</i>									
"	Quebec—L'Ange Gardien.	1885	13	52¾	8	2,300			
"	L'Ange Gardien—Orleans Island.....	1885	.....	¾					
"	On Orleans Island	1885	29½	.....					
"	Orleans Island—Isle Réaux.....	1889	2	2			
"	On Isle Réaux.....	1889	2½	.....					
"	Isle Réaux—Grosse Isle.....	1889	.....	2					
"	On Grosse Isle (all told).....	1885-94	3½	316½	10	1,500			
	<i>Anticosti System :</i>									
"	Gaspé—L'Anse à Fougère	1881	28	.....					
"	L'Anse à Fougère—Anticosti.....	1881	44½	146½	9	2,000			
"	On Anticosti Island.....	1881-90	223½	.....					
"	Anticosti—Long Point, Mingan	1890	.....	21					
"	Meat Cove, C. B.—Magdalen Islands...	1880	55	91			
"	On Magdalen Islands	1881-1902	91	½						
Ontario	<i>Pelee Island System :</i>									
"	Leamington—Point Pelee.....	1889	12	42½	9	800			
"	Leamington Dock—Pelee Island.....	1901	.....	17					
"	On Pelee Island.....	1889-1900	13½	.....					

* For convenience in totalling, the knots of cable are regarded as statute miles.

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GOVERNMENT TELEGRAPH LINES—*Concluded.*

Location of Lines.	Points connected.	Year.	Length of Lines.			Number of Offices.	Yearly Average of Messages Sent.
			Land Lines.	Cables.	*Total.		
			Miles.	K'ts.			
North-west.....	Qu'Appelle—Edmonton and St. Albert..	1883-87	607½	.. ..	607½	15	4,700
"	Moosejaw—Wood Mountain.....	1885	90½	....	90½	2	300
British Columbia	Ashcroft—Barkerville (local wire)... ..	1878-87	276½	.. .	276½	9	4,500
" ..	Victoria—Cape Beale .. .	1891	118	.. .	175	8	150
" ..	Alberni—Cape Beale.....	1899	57	.. .			
" ..	Nanaimo—Comox and Alberni .. .	1893-95	110½	....	110½	10	7,000
" ..	Kamloops—Lower Nicola.. .	1899	67	....	67	6	2,000
" ..	Ashcroft—Lillooet.....	1896	62	..	62	1	500
" ..	Golden—Windermere.. .	1901	82	....	82	2	
" ..	Duncan Station—Salt Spring Island .. .	1902	15	¾	15¾	2	
Yukon	Ashcroft—Dawson and Boundary....	1899-1901	1,826	....	2034	28	40,000
"	Hazelton—Port Simpson.....	1901	199	....		
" ..	Port Simpson—Aberdeen Canneries.....	1902	9	...			
	Total end of 1902.....		5,481½	238½	5,720	222	89,400

For convenience in totalling, the knots of cable are regarded as statute miles.

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REPORT ON THE GOVERNMENT TELEGRAPH SERVICE FOR 1901-2.

EXPLANATORY NOTES.

The tabular statement prefacing this report shows the total mileage, &c., of the telegraph lines operated by the government. Lines that have been subsidized or constructed and transferred by the government for operation by private companies are not included in this list.

The matter in the following pages comprises merely a statement of specific actions taken in the course of the year, and in any case where no particular reference is made to a line found mentioned in the list, the understanding intended to be conveyed is that that line has been satisfactorily operated throughout the year, without any change of conditions since last made mention of in the annual reports.

NEWFOUNDLAND.

The line from *Port au Basque* to *Cape Ray* continued to be operated as heretofore under an arrangement with the Anglo-American Telegraph Company.

MARITIME PROVINCES.

MABOU—MEAT COVE AND NORTH SYDNEY—MEAT COVE LINES.—The operation of these lines continued as in the preceding year.

At *Indian Brook*, on the North Sydney line, an office was opened August 1, 1901, with R. McDonald, as agent operator.

At *Englishtown*, D. Campbell succeeded his father, Mr. J. Campbell, deceased, as lineman for the Englishtown-Baddeck section, but shortly afterwards he retired and was succeeded by R. H. McLeod, November 1, 1901,

In January, 1902, the construction of a loop line from Barachois Bridge near Indian Brook, to Murray (South Mountain or Oregon Glen) a distance of 9 miles, was completed and an office was opened at Murray with Miss B. Matheson, as agent operator.

Repair sections.—In June, 1902, the Mabou-Meat Cove line was apportioned in sections ranging from 6 to 16 miles and put in charge of several local repairers resident along that route; the total of the fixed payments amounting to \$320 per annum dating from July 1. This arrangement is similar to what has been followed in connection with the North Sydney-Meat Cove line since 1898.

NEW LINES IN CAPE BRETON.—In the course of the present season (1902), tenders were called for the construction of the following new lines to complete the government telegraph system in the Gulf and for which provision was made at the last session of Parliament, viz.:—

	Miles Estimated.
Mabou to Port Hawkesbury.....	40
Port Hawkesbury to St. Peters.....	30
St. Peters via Gabarous to Main-à-Dieu and Scatari.....	90
Gabarous to North Sydney.....	35
Port Mulgrave to Guysborough and Canso.....	55
And cable connection Port Hawkesbury, Port Mulgrave.....	1
Total about.....	251

NOTE.—In the month of August (1902), the ss. *Tyrian* laid the requisite cable stretch (1½ knots of 8 ton I. R. locked sheathing shore end type) between Scatari Island and Campbell's Cove, Main-à-Dieu, and left the ends in readiness for the land line connections in cable huts erected for that purpose.

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ANTICOSTI ISLAND LINES.—The renewal of the line wire between English Bay and Becscie River was completed in the spring of 1902, and in the course of the season the line throughout was cleared of interfering wood growths and otherwise put in general repair. It is probable that provision for a more extensive and general renewal of the line wire will have to be made in a year or two as the original wire has become very much impaired through corrosion. These lines were built in 1881.

The cable between *Long Point and Mechastic Bay* which was repaired, as stated in the last annual report, on August 19, 1901, became again interrupted on January 14, 1902, and remained inoperative up to the close of the fiscal year.

NOTE.—The ss. *Tyrian* visited the locality in the course of the past season and repaired the cable on August 9, 1902. As in the previous year, connection between Anticosti and the mainland was throughout maintained by the cable from South West Point to Gaspé, so there was no interruption of service. However, this Long Point cable again gave out on October 24, 1902, and is at the present date inoperative. The interruption last year was due to the parting of the conductor at a spot off the Long Point side where the sheathing wires had entirely wasted away by corrosion, and in the first instance this year it was found due to the same cause off the Anticosti side. The present interruption was, by tests made on November 7, located at 9 miles off Long Point, but the season was too far advanced to warrant an attempt at repair.

In view of the frequent interruption of this cable since it was laid in 1890, it may be found advisable to pick it up and relay it with an additional length by a route farther westward where a more suitable bottom is likely to be found for it.

At *Shallop Creek*, where the telegraph station is necessary to the maintenance of the service, it was found impracticable to continue the agency on guaranteed commission, as had formerly been done, and the agent-operator, Mr. B. Bradley, was put on salary from November 1, 1901.

MAGDALEN ISLANDS LINES.—A loop-line extension beyond House Harbour to Point Basse, 4 miles, was built this season (1902). A length of $5\frac{1}{2}$ knots I.R. cable, weight 2 tons per knot, was imported for the Etang du Nord sand-bar section, and enough No. 6 line wire for renewal of the old wire for a distance of 50 miles has also been provided under appropriations made for the purpose last session. Further renewal of the old wire is likely to be found advisable as the line, which was built in 1881, has by corrosion become very much attenuated and weakened in the same way as at Anticosti already mentioned.

At *Etang du Nord* the former general repairer, Mr. P. Pelletier, resigned from the service and was succeeded by Mr. J. G. Binet, October 21, 1901.

ST. PAUL'S ISLAND CABLE.—There is nothing to add to what was noted in last year's report. The cable continues in operation and nothing has been done to it since the repair mentioned.

BAY OF FUNDY LINES.—On October 30, 1901, the cable between Whitehead Island and Cheyney's Island again gave out, and after the completion of the work of the ss. *Tyrian* in the Gulf of St. Lawrence, a short length of 600 feet of locked armour shore end cable was taken round by rail and boats and put into position, spanning a worn out section about midway in the channel. The cable across this channel is about three-quarters of a knot in length. The repair was made on November 9, and subsequently an obscure circuit trouble, at first supposed to be due to a fault in the Eastport cable, was investigated and cleared out by renewals at the terminal hut at Campobello.

NORTH SHORE LINES.—The proposed St. Etienne-l'Anse St. Jean line, owing to some difficulty in arranging for a supply of poles last winter, has not yet been built, but action is being taken towards its construction.

The branch line from *Tadousac to Sacré Cœur*, $12\frac{1}{2}$ miles, mentioned in last year's report, was completed and an office opened there on December 6, 1901, with L. Mattais as agent-operator.

At *Rivière aux Canards* the former repairer, E. Bouilenne, was succeeded by G. Bouilenne, November 15, 1901.

Quebec—Murray Bay.—To afford a better connection with the government line terminating at Murray Bay, the G. N. W. Telegraph Company strung a second wire from Quebec, in November, 1901, the single wire previously in use being too much occupied by the local offices embraced by it.

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At *Bersimis*, the agent-operator, Mr. A. Lausier, who had been in charge of the repeating office since 1896, died on December 29, 1901, and has been succeeded in the agency by Mrs. Lausier, former assistant operator, an assistant being temporarily employed pending a further definite arrangement.

At *Seven Islands*, the position of general lineman for the Point de Monts-Point Esquimaux section was resigned by Mr. F. Gallienne, on May 1, 1902, and he has been succeeded by L. N. Caron, formerly of Tadousac.

At *Moisie*, for the convenience of the Messrs. Halliday Bros., an accommodation office was opened on May 1, 1902. This office is designated Moisie East.

At *St. Marguerite River*, for the convenience of the Pulp Mills Company, a loop extension of half a mile from off the main line is about to be made for the establishment of an office at the mills.

At *Tadousac*, for the summer months, an accommodation office was opened in the hotel (July 4, 1902).

At the farther end of the North Shore line, offices were opened at the Point Armour Light, February 8, 1902, with W. Wyatt, light-keeper, as agent-operator; and at Forteau Bay, in June, 1902, with A. A. Hart, as agent-operator.

THE BELLE ISLE CABLE, which was laid on September, 1901, as noted in last year's report, was crushed by an iceberg $5\frac{1}{2}$ miles off Belle Isle on the 27th of the same month, and repaired by the ss. *Tyrian*, at that time in the neighbourhood, on October 10.

NOTE.—This cable was again broken by an iceberg on June 19, 1902. The *Tyrian* was got ready and proceeded to the locality and repaired the damage, this time $1\frac{1}{4}$ miles off the Chateau Bay shore, on July 18, since when it has continued in working order.

THE MARCONI WIRELESS TELEGRAPH STATION, arranged at Chateau Bay and Belle Isle, 20 miles apart, in September, 1901, as mentioned in the last annual report, were operated daily throughout the winter, with a short interruption due to damage to the mast at Belle Isle in a sleet storm; but the communication all along was imperfect and always the same under every condition of weather. The faulty working was difficult of correction owing the remoteness of the locality; but after the repair of the Belle Isle cable had been attended to this season, as already reported, the trouble was investigated and by a simple expedient entirely eliminated, so that the system was on August 1st, 1902, put into thoroughly reliable and easy operation, and it has so continued; the signals being received by sound, and ink records on tape taken at the pleasure of the operators.

As at present situated, however, the operations are performed at huts adjacent to the masts at too great a distance from the dwellings of the operators for practical purposes, and there remains the necessity for the erection of special buildings at one or both stations, depending upon the possibility of shifting the position of the mast at Belle Isle, which can only be determined by actual trial. Provision to this end was in hand in the course of the past season, but there was so much work to be done elsewhere that this proposed action had to be deferred, with the expectation of its being carried out early next year.

In concluding this reference to a new departure in telegraphy, it may be opportune to mention the gratifying fact that the local representatives of our telegraph service at Chateau Bay (Mr. Jos. Maloney) and at Belle Isle (Messrs. J. Osborne and J. C. Colton), not one of them by any means an old or experienced telegrapher, readily demonstrated the practical character of the novel apparatus by the aptitude with which they took up its operation and management.

SIGNAL SERVICE.—It may be noted that an authorization has been issued to have Belle Isle and any other signal station that may be established in connection with the North Shore telegraph, included in the general operation of the Gulf Signal Service, so far as the free handling of the ordinary reports over the government lines is concerned.

GROSSE ISLE QUARANTINE LINE.—On December 26, 1901, the cable between St. François and Isle aux Reaux, which had been put in order in the month of May, again gave out and had to remain unrepaired until the spring. Meanwhile preparations were made for the all round betterment provided for in the previous year, as mentioned in the last annual report; and towards the end of April the work was taken in hand and performed by means of a tug and batteau. It had been found by local observation

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since the changes were proposed that the landings at St. François and Isle aux Reaux were as good as could be had, so these were adhered to; the four $\frac{1}{4}$ knots of new (12-ton Z type) cable were in each case introduced from low water mark outwards. At Grosse the landing place was changed to the bay at the west end; the $\frac{1}{4}$ knot of new cable in this instance was put in at a point about 800 feet from shore so as to span the channel outside. In making this change the whole of the main cable was picked up and relaid; and the land wire long ago terminating at the upper wharf was diverted along six of the poles of the electric light system and thus carried to the new cable landing. This places the office at the residence of the medical superintendent in an intermediate position on the line, and the main office at the lower wharf becomes the terminus. The portion of the line that ran from the main office round to the former landing is now abandoned. Connection between Grosse Isle and Quebec was restored on May 6 (1902), and during the subsequent period occupied by the work on the Grosse Isle section communication was maintained by the temporary laying of 2 knots of light cable (I. R. 3-ton gulf type) provided for that purpose. After the work was finished (May 27, 1902) 1 knot of this cable was laid down for a projected telephone connection between l'Ange Gardien and St. Pierre, Orleans Island, paralleling the existing telegraph cable; and the remaining knot on a reel was put in store and is available for use elsewhere.

. ONTARIO.

PELEE ISLAND LINE.—After the work done on the cable in August, 1901, this line continued in operation throughout the year.

NOTE.—Since July 3, 1902, the cable has been dragged into by vessels' anchors no less than three times; and at date of this report it is broken, but an attempt is being made to restore it for the winter. The trouble has been for most part in the length of the old original cable that was used to reach the new landing place at Leamington Dock. It will be necessary to provide for the renewal of this portion, 6 miles or so, next season or to revert to the former landing place at Point Pelee. The difficulty in maintaining this connection all along has been the liability to interference from vessels' anchors.

PORT ROWAN—LONG POINT LIGHT.—The construction of this proposed telephone line, for which an appropriation was provided, was deferred pending an agreement with the proprietors of the reservation through which the line would necessarily pass.

NORTH-WEST.

Nothing beyond ordinary general repairs by the regular linemen of the service was called for during the past year.

At *Edmonton*, in October, 1901, Mr. S. B. McNamara, joint-agent for the C.P.R. and government lines since June, 1899, was succeeded by T. J. McNamara.

At *Star*, the office was closed in December, 1901, in consequence of the going away of the agent-operator, who had been in charge. It was reopened again in March with V. Gauvreau, of Edmonton, temporarily appointed.

At *Saddle Lake*, at the end of May, 1902, owing to a sudden bereavement, the agent operator Mr. L. G. Picard was relieved by J. W. Carroll, from Moose and the latter office was temporarily closed.

Duck Lake—Batoche, 9 miles.—This section of the old Prince Albert line that was transferred to the Canadian Pacific Railway when their system was extended in that district, was allowed to fall into disuse. It was recently found a useful purpose could be again served by it, and its repair and maintenance was assumed by the department; at the same time an extension from Duck Lake to the Indian Agency, $3\frac{1}{2}$ miles, was likewise undertaken; some of the material from the old St. Laurent section (no longer needed) being utilized for this new connection. These arrangements were in hand at the close of the fiscal year.

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BRITISH COLUMBIA AND YUKON.

ALBERNI-CLAYOQUOT LINE.—Pursuant to what was in contemplation as mentioned in last year's report, tenders were called for and a contract was entered into with Mr. A. J. Conlin, for the construction of this proposed line by a route starting from a point opposite Franklin Creek, whence Alberni is reached by a cable ($\frac{1}{2}$ mile) across the canal and a second wire on the existing pole line along the east shore. This work under the superintendence of Mr. Havalague was well in hand at the close of the fiscal year.

GOLDEN-WINDERMERE LINE.—For general purposes it was found best calculated to operate this connection, unlike the Kamloops—Nicola (Telephone) section, as a telegraph line. At Golden a temporary arrangement was made, whereby the C. P. R. agent became joint-operator for the railway and government lines; and at Windermere Mr. V. F. Dunn was appointed agent-operator on December 19, 1901, and F. E. Kimpton appointed lineman.

Arrangements were under way at the close of the fiscal year for the proposed extension to Wilmer (formerly Peterboro.)

SALT SPRING ISLAND.—Under an appropriation made at the previous session, a telephonic connection was established in October, 1901, between Duncan Station on Vancouver Island, and Edward's store on Salt Spring Island. The line, 15 miles in length, was built by day labour, and a stretch of $\frac{3}{4}$ mile of cable was laid across the intervening channel. A table of distances is given hereunder; there have been no staff appointments, the line being for the present merely for general convenience and looked after by the persons directly interested.

Duncan's Station to Maple Bay.....	9 miles.
Maple Bay to Sanson Narrows.....	3 "
Sanson Narrows to Salt Spring Island (cable).....	$\frac{3}{4}$ "
Landing Place to Edward's store on Island.....	3 "
Total.....	15 $\frac{3}{4}$ miles.

VICTORIA-CAPE BEALE LINE.—Under an appropriation made for the purpose last session, the repoling of the portion of this line between Victoria and Otter Point was in hand at the close of the fiscal year.

PACIFIC CABLE CONNECTION.—In anticipation of the early completion of the laying of the Pacific Cable, for which Bamfield Creek, near Cape Beale, had been selected for the landing place, an arrangement was entered into with the Canadian Pacific railway, whereby the existing pole line of the government telegraphs between Nanaimo and Bamfield Creek, via Alberni, is utilized for the suspension of additional wires and as an equivalent for the accommodation the company shares the expenses of maintenance of this government line in working order.

NANAIMO-COMOX AND PARKSVILLE-ALBERNI.—These lines were being overhauled and put in general good repair at the close of the fiscal year.

YUKON LINE.—The superintendency of the whole of the Ashcroft-Dawson and Boundary line, together with the local Ashcroft-Lillooet branch, was, in November, 1901, put in the hands of Mr. M. W. Crean, who had been acting in the same capacity on the upper section before the line was put through; and Mr. James Wilson, former joint superintendent for the Canadian Pacific and government lines, was relieved of the charge of the latter, the Victoria-Cape Beale section being included with the others south of Ashcroft under the superintendence of Mr. W. Henderson, of the resident engineer's office at Victoria.

The construction of a short line from off the Port Simpson branch to connect the Aberdeen canneries on the Skeena River was in hand at the close of the fiscal year.

NOTE.—This connection was made and office opened on July 24, 1902.

Tariffs.—A rearrangement and reduction of the tariff for the Yukon line having been decided upon, a new scale of rates was issued and put into effect from June 1, 1902. A copy of this new sheet will be found in the appendix to this report.

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TELEGRAPH SERVICE GENERALLY.

Cable Ship.—The ss *Tyrian*, elsewhere mentioned in several places, was described in last year's report. Captain Neil Hall was in command during the season of 1901, and this year (1902) she was commanded by Captain T. O'Leary, Mr. C. E. Stewart continuing as heretofore as chief engineer. All of the work in which the *Tyrian* has been engaged was very successfully carried out, without hitch or mishap, including the recent laying of the new cable stretches connecting Grosse Isle, Magdalen Islands, with Bryon Island (11·17 knots) and Bryon Islands with Heath Point, Anticosti, (92·63 knots). This last mentioned stretch was laid in the short space of 27 hours (November 4 and 5, 1902) the performance being very gratifying as well as highly creditable to all of those who were happily associated in it.

Electrician's Services.—For the greater part of the past two seasons Mr. A. B. McDonald, agent and circuit manager at Meat Cove, Cape Breton, has been associated with the electrical work in connection with the laying and repairing of the cables, which work had been in the course of the past 15 years, except where noted in the annual reports, attended to solely by the present general superintendent of the service. Mr. McDonald rendered admirable assistance in connection with the Marconi stations, and in the course of the laying of the long cable above mentioned.

REVENUE AND EXPENDITURE.

The revenue and expenditure for each of the lines in the several districts hereinbefore mentioned are given in the following table:—

1901-02.	Expendi- ture.	Revenue.	Remarks.
	\$ cts.	\$ cts.	
Lower St. Lawrence and Maritime Provinces:—			
Anticosti Island lines.....	4,242 88	2,616 06	
Bay of Fundy ".....	1,377 89	885 31	
Cape Ray ".....	250 00		
Cheticamp ".....	1,074 87	1,572 93	
Escuminac ".....	435 00	178 68	
Magdalen Islands lines.....	2,309 01	732 76	
Father Point Agency.....	500 00		
Meat Cove line (including St. Paul's Island).....	1,988 37	114 76	
North Shore St. Lawrence (East of Bersimis).....	5,139 04	2,693 91	
" " (West of Bersimis).....	2,619 94	1,369 32	
Quarantine line.....	1,090 28	553 18	
Cable ship " <i>Tyrian</i> " renewals of plant, &c.....	28,277 54		
Subsidies, stationery, line and office material and contingencies, chargeable to appropriation for Gulf lines.....	4,228 88	.	
Total for Lower St. Lawrence, &c.....	53,533 70	10,716 91	
Ontario Pelee Island line.....	206 87	220 20	
North-west telegraph lines.....	18,538 51	2,627 80	
British Columbia, Alberni—Cape Beale Line.....	1,554 50	10 43	
Barkerville and Lillooet lines.....	10,589 61	3,875 22	
Golden-Windermere line.....	1,441 30	97 28	
Kamloops—Nicola.....	1,019 65	627 83	
Comox (including Alberni line),.....	4,640 76	2,443 05	
Vancouver—Salt Springs Island line.....	50 00		
Victoria—Cape Beale line.....	7,927 69	363 81	
British Columbia Telegraph Service generally.....	555 09		
Yukon, Quesuelle—Atlin.....	66,170 13		
Bennett—Dawson.....	130,220 31		
Telegraph service generally.....	2,520 23		
Total.....	298,968 35	114,266 21	Signal Service messages, Meteorological Service messages, reports and Fisheries bulletins are handled free of tolls.

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DEPARTMENTAL TELEPHONE SERVICE.

At the end of June, 1902, the telephone connections with the central office of the Bell Telephone Co. at Ottawa, listed as chargeable to the special appropriation, numbered 207, the annual charge for which amounts to \$7,992. These connections are distributed amongst the several departments as hereunder :

Department.	Offices.	Residences.	Annual charge.
			\$ cts.
Agriculture..	9	3	430 00
Auditor General.....	1	1	115 00
Customs.....	3	1	150 00
Finance.....	2	2	123 00
Government House....	4	2	308 00
House of Commons.....	11	3	535 00
Inland Revenue.....	4	5	320 00
Interior.....	12	5	650 00
Geological Survey.. . . .	2	1	110 00
Mounted Police.	2	1	120 00
Indian Affairs.,... . .	3		115 00
Justice.....	6	6	470 00
Dominion Police.....	6	2	313 00
Marine and Fisheries.. . . .	4	3	263 00
Militia and Defence.....	11	8	720 00
Post Office.....	5	3	290 00
Parliamentary Library.. . . .	1	2	120 00
Privy Council.....	4	4	375 00
Railways and Canals....	3	3	215 00
Secretary of State.....	3	2	180 00
Public Works.....	21	14	1,420 00
Ottawa River Works.	3		155 00
Stationery Department.	3	2	175 00
The Senate.....	3	1	140 00
Trade and Commerce.....	2	2	145 00
Labour Department.....	1		35 00
	131	76	7,992 00

APPENDED TABLES.

The usual tabular statements of the lines and offices, staff, &c., of the telegraph service, following hereupon, will be found to contain whatever additions or changes have been made up to June 30, 1902.

D. H. KEELEY,
General Superintendent.

OTTAWA, December 12, 1902.

GOVERNMENT TELEGRAPH SERVICE.

NEWFOUNDLAND TELEGRAPH SERVICE.

No.	Stations.	Interme- diate Distance.	Operator.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Port au Basque.....	0	.....	50 00 or commission...	.....	N.B.—The commission is 25 per cent upon all busi- ness to and from the office; said commission guar- anteed not to be less than at the rate of \$50 per annum.
2	Cape Ray Lighthouse.....	14	.....	50 00 "	.....
	Total.....	14		100 00 "		

N.B.—The above short line is constructed in connection with the Signal Service, and connects at Port au Basque with the land line system of the Anglo-American Telegraph Company.

GOVERNMENT TELEGRAPH SERVICE—Continued.

ANTICOSTI TELEGRAPH SYSTEM.

No.	Station.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles:		\$ cts.		
1	*Fox Bay.	0	Geo. Cabot.....	50 00 or commission..	May 13, 1899..	The commission is 25 per cent on all business to and from the office in each instance; and commission guaranteed not to be less than at the rate of \$50 per annum.
2	Heath Point Lighthouse...	23	A. Tremblay.....	50 00	Aug. 1, 1900..	* A special allowance for maintenance of office, \$50 per annum, has been added to the commission for offices marked*, since September, 1887.
3	South Point Lighthouse...	32½	A. Nadeau.....	50 00	Oct. 1, 1888..	
4	*Shallop Creek.....	17½	B. Bradley..	240 00	July 7, 1881..	Salary \$50 per year previous to November, 1901.
5	Salt Lake.....	52½	Z. Beaudin, repairer.....	365 00	May 6, 1896..	General repairer. Plns \$1 per d. when absent on duty.
6	South-west Pt. Lighthouse.	15	A. Beaudin, operator. . .	50 00	" 12, 1896..	
7	Jupiter River.....	7	A. Z. Lemieux, operator...	300 00	June 1, 1901..	
8	Otter River.	17½	.....	50 00	.....
9	*Becscie River.....	22	.....	50 00	.....	Temporarily closed since May, 1899.
10	Cape Eagle (Ellis Bay)....	10	.....	50 00	.....
11	West Point Lighthouse...	9	A. Malouin, dist. supt.	344 00 per annum.....	Aug. 1, 1900	Salary \$200 per year previous to June, 1902.
12	English Bay ...	3	" operator.....	50 00	" 10, 1881..	
....	Mechastic Bay (cable land- ing).....	14½	F. Cabot.....	120 00 and commission..	July 1, 1882..	
	Totals.....	223½	.....	1,485 00	.....

South-west Point connects with l'Anse à Fougère, Gaspé, by cable 44½ knots; and from Mechastic Bay connection is made with Long Point of Mingan by cable 21 knots.

0	L'Anse à Fougère.....	.....	N. Bernier.....	17 00	.....	Special allowance for the cable terminus. A testing station only.
1	Gaspé Basin.....	28	J. J. Annett	420 00	Oct. 16, 1881..	Transfer office. Connection with G.N.W. telegraph system.
		28		437 00		

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MAGDALEN ISLANDS SYSTEM.

MAGDALEN ISLANDS SECTION.

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Amherst.....	0	Miss J. Shea.....	50 00 or commission..	Oct. 1, 1882.	The commission is 25 per cent on all business to and from the office in each instance; said commission guaranteed to be not less than at the rate of \$50 per annum.
2	Amherst Lighthouse	9	Wm. Cormier.	50 00	June 11, 1881.	Plus \$1 per day when absent on duty.
3	Etang du Nord village.....	15	I. G. Binet, gen. repairer..	400 00	Dec. 1, 1900.	Two-wire loop line.
4	Etang du Nord Lighthouse.	1	Mrs. A. Binet.....	50 00	" 1, 1881.	
5	Grindstone Island.....	5	N. Arseneault.....	50 00	Sept. 1, 1891.	
6	Grindstone West.....		W. Leslie.	Commission 25 p.c.	May 20, 1897.	
7	House Harbour (½-knot cable).....	3	A. LeBourdais, dist. supt..	600 00	Aug. 17, 1880.	Plus \$1 per day when absent on duty.
8	Wolfe Island.....	28½	Mrs. LeBourdais, operator.	50 00	Sept. 15, 1893.	
9	Grosse Isle.....	11	P. L. Joncas.....	50 00 or commission..	June 1, 1888.	
10	Grand Entry.....	11	N. Clark.....	200 00 and commission.	June 1, 1888.	
			Mrs. F. Atkins..	50 00 or commission..	Feb. 18, 1882.	
		83½		1,550 00		

Grosse Isle connects at Old Harry with Meat Cove, C.B., by cable 55 knots.

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GOVERNMENT TELEGRAPH SERVICE—Continued.

MAGDALEN ISLAND SYSTEM.
CAPE BRETON SECTION.

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
1	Meat Cove (cable station)...	Miles. 6	A. B. McDonald, Circuit Manager	720 00.....	Nov. 7, 1880.	Salary. \$500 per year previous to Sept. 1, 1901. The commission is 25 p.c. on all business to and from the office in each instance ; said commission guaran- teed to be not less than at the rate of \$50 per annum.
2	Aspy Bay.....	10½	I. Y. Nichols.....	50 00 or commission	July 1, 1894.	
3	Dingwall (loop line).....	3¾	Murdoch McLeod.....	50 00 "	Aug. 31, 1898.	The loop line formerly running to White Point has been withdrawn.
4	Neil's Harbour (half-way house loop line).....	14 1	M. McLeod.....	50 00 "	April 1, 1887	
5	Ingonish North Bay.	9	J. M. Burke.....	50 00 "	" 1, 1882.	
6	South Ingonish	10½	Geo. Brewer.....	50 00 "	May 7, 1899.	
7	French River ½ knot cable.	23	John McDonald	50 00 "	April 1, 1899.	
8	Indian Brook.....	5	Annie McDonald	50 00 "	Aug. 1, 1' 01.	
9	Murray (loop line).....	14 1	R. B. Matheson.....	25 p.c, R & Cks	Jan. 20, 1902.	25 per cent commission only.
10	Englishtown ½ knot cable...	10	W. Bingham.. ..	120 00 or commission	July 19, 1882.	Switching point for Baddeck line.
11	South Gut, St. Ann's (on loop).....	5	... ..	50 00 "	.....	Closed December 31, 1899.
12	Baddeck (on loop).....	13	A. Anderson.....	120 00 "	Dec. 2, 1898.	Guaranteed comm'n was \$50 prior to March 1, 1900.
13	Englishtown (back on loop) Kelley's Cove, N. Camp- bellton.....	18	... ..	.....	... ..	This loop to Baddeck starts from and returns to Englishtown.
14	Big Bras d'Or ½ knot cable.	6	Miss M. Campbell	50 00 or commission	April 1, 1885.	
15	North Sydney	2½	Mrs. E. Livingston.. ..	50 00	Jan. 1, 1889.	
	<i>Repairers' Sections.</i>	12½	W. U. Tel. Co.....	..... Commis'n only	.....	The commission is 50 p.c. on local business and 25 p.c. on through messages ; and covers supervision of line and office accommodation at North Sydney.
	Meat Cove—Sugar Loaf...	.....	M. McAskill.. ..	80 00	April 1, 1898.	
	Sugar Loaf—Ingonish.....	.....	Charles Smith	80 00	" 1, 1898.	
	Ingonish—Englishtown .....	.....	R. A. McDonald	80 00	" 1, 1898.	
	Englishtown—Baddeck.....	.....	D. Morrison.....	60 00	" 1, 1898.	
	Englishtown—N. Sydney..	.....	M. D. McLeod.....	60 00	" 8, 1902.	
	Murray—Indian Brook.....	.....	John Smith	25 00	June 17, 1902	
	Totals	168½		1,845 00		

Meat Cove station connects with the Magdalen Islands system by a cable to Old Harry Head, 55 knots, and with St. Paul's Island by a cable of 20 knots. The latter is operated with telephones.

NOVA SCOTIA TELEGRAPH SYSTEM.

CAPE SABLE SECTION.

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Barrington.....	0	.....	.....	.....	This line has been leased to the Barrington Telephone Company from August 12, 1897. The lease is terminable at any time.
2	Newellton (including 1½ knots cable).....	11	.....	.....	.....
3	Cape Sable Island light-house including 4 mile cable).....	6½	.....	.....	.....
	Totals	17½	.....	.....	.....

EAST COAST SECTION.

N.B.—In connection with the Signal Service, a land line, 208 miles in length was erected in 1881, between Canso and Halifax, for a bonus of \$16,000, and is maintained and operated by the Western Union Telegraph Company, without further cost to the Government.

GOVERNMENT TELEGRAPH SERVICE—Continued.
MABOU-CHETICAMP AND MEAT COVE, C.B., TELEGRAPH SYSTEM.

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum. . .	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Mabou.....	0	Mrs. M. McDonald.....	120 00 per annum. . .	April 1, 1887.	The commission is 25 p. c. of the Government line tolls, and is guaranteed to amount to not less than \$50 per annum. Where 50 p. c. commission is paid there is no guarantee as to amount.
2	Broad Cove	20	Mrs. Annie McLelland.....	50 00 or commission	Mar. 1, 1892.	
3	Broad Cove Station.....	3½	Accommodation offices.....	25 p.c. without guarantee	July —, 1901.	
4	South-west Margaree. . .	8½	J. D. McFarlane	50 00 or commission	*Feb. 1, 1898.	
5	Margaree Harbour.....	5	H. K. McLean.....	50 00 "	Oct. 20, 1896.	
6	North-east Margaree (loop line wire)	10	Mrs. J. D. Ross.....	50 00 "	Feb. 1, 1898.	This office re-opened after having been closed since January 1899. *At South-west Margaree the commission was 50 p.c. till Sept. 1, 1899.
7	Grand Etang.....	9	G. Doucet.....	50 00 "	Sept. 13, 1902.	
8	Cheticamp.....	8	Mrs. M. Fiset.....	100 00 "	" 1, 1887.	
9	Pleasant Bay.....	27	Mrs. D. Smith.....	50 00 "	Apl. 14, 1900.	
	Meat Cove.....	19	{ See Meat Cove Line..... } { D. C. Dawson, D. Supt.. }	150 00 "	Jan. 1, 1887.	
	<i>Repairer's Sections.</i>					
	Mabou—Strathlorne		L. G. McDougall.....	40 00 per annum. . .	Nov. 3, 1902.	
	Strathlorne—S. W. Mar- garee.....		J. D. McFarlane.....	40 00 "	June 4, 1902.	
	S. W. Margaree—Margaree Harbour.....		Alex. McFarlane, sr.....	40 00 "	" "	
	Margaree Harbour—Cheti- camp.....		A. Munroe.....	50 00 "	" "	
	Cheticamp—Barren.. .		F. Ancoin.....	40 00 "	" "	
	Barren—Pleasant Bay. . .		J. A. McLean	40 00 "	" "	
	Pleasant Bay—Polits Cove.		K. Fraser.....	40 00 "	" "	
	Polits Cove—Halfway Shanty.....		E. Fraser.....	30 00 "	" "	
	Halfway Shanty—Meat Cove.....		R. Fraser	40 00 "	" "	
	Totals.....	190		1,030 00		

CHATHAM-ESCUMINAC, N.B., TELEGRAPH SYSTEM.

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Chatham.....	0	Great North-western Tele- graph Co.....	185 00.....	This amount is paid for supervision of the line and office accommodation at Chatham. The commission is 25 p. c. of the Government line tariff receipts in each instance, and is guaranteed to amount to not less than \$50 per annum. \$12 per annum allowed for care of main battery at Point Escuminac.
2	Black Brook ..	5½	.....	50 00 or commission	.....
3	Baie du Vin.....	15	Mrs. M. Williston.....	50 00 "	Mar. 1, 1885.	
4	Lower Hardwicke ..	6	Mrs. M. Brimmer.....	50 00 "	Aug. 1, 1891.	
5	Escuminac....	3¾	D. Lewis	50 00 "	Sept. 1, 1885.	
6	Point Escuminac lighthouse	12	K. R. McLennan.....	50 00 "	Nov. 1, 1893.	
	Totals.....	42		435 00		

GROSSE ISLE QUARANTINE TELEGRAPH SYSTEM.

1	Quebec..	0	Great North-western Tele- graph Co	185 00	This amount is paid for supervision of the line, and covers rent of pole line from Quebec to L'Ange Gardien, for which \$35 per annum is charged. This commission is 25 p. c. of the Government line tariff in each instance, and guaranteed to amount to not less than \$50 per annum.
	L'Ange Gardien.....	13			.....
	Orleans Island (cable).....	¾			.....
2	St. Pierre	4½	C. Turcott.....	50 00 or commission	Mar. 1, 1885.	
3	Ste. Pétronille.....	3¼	M. Plante.....	50 00 "	April 7, 1896.	
4	St. Laurent.....	6½	M. Gobeil	120 00 and 25 p.c. commission.	Sept. 15, 1888.	
5	St. Jean.....	7	P. Pouliot.....	120 00 and 25 p.c. commission.	July 1, 1888.	\$12 per annum allowed for care of main battery at Groose Isle. NOTE.—The telephone system on Grose Isle since May 1893, has comprised 1¼ miles of 2-wire line with 11 connections or stations.
6	St. François.....	6¾	O. Lemelin.. ..	50 00 or commission	" 15, 1900.	
7	Isle Réaux (including 2 knots cable).....	3¼				
	Isle Réaux (land line).....	2½				
8	Grosse Isle quarantine office (including 2 knots cable).	3½	M. D. Masson.....	120 00 and 25 p.c. commission.	May 1, 1901.	
	Quarantine telephone sys- tem 2-wire line.....	1¾	.....		
		52¾		695 00		

GOVERNMENT TELEGRAPH SERVICE—Continued.

BAY OF FUNDY N.B., TELEGRAPH SYSTEM.

GRAND MANAN SECTION.

No.	Stations.	Inter- mediate Distance.	Agents and operators.	Salaries per annum.	Date of Appointment.	Memo.
	<i>Long Eddy Cable Hut to</i>	<i>Miles.</i>		<i>\$ cts.</i>		
1	Flagg's Cove.....	3	Mrs. C. C. Seely (D. Supt.)	540 00	Nov. 18, 1889	*The commission is 25 p.c. on all business to and from the office in each instance; said commission guaranteed not to be less than at the rate of \$50 per annum. When 50 p.c. commission is paid there is no guarantee as to amount.
	"		Miss M. E. Burnham.....	50 00 or commission	Oct. 1, 1893	
	"		A. Gilmour, repairer ..	60 00	Dec. 1, 1894	
2	Castalia	2½	G. E. Dalzell.....	Commission 25 p.c.	June * 1, 1898	\$25 per annum is included for repeating Whitehead branch. Southern Head office is now operated by telephone from Seal Cove.
3	Woodward's Cove	3½	W. A. Fraser	" 50 "	Feb. 28, 1893	
4	Grand Harbour.....	2	J. L. Newton.....	75 00 or commission	April 1, 1887	
5	Seal Cove.....	4½	J. Ingersoll.....	50 00 "	Sept. 22, 1894	
6	Southern Head Lighthouse.	5½	O. McLaughlin.....	Commission 25 p.c. ..	April 24, 1897	
	<i>Branch Line.</i>					
	Grand Harbour.....	0				
7	Cheney's Island (½ knot cable).....	4¾	W. Cheney.. ..	Commission 25 p.c. ..	Feb. 1, 1891	
8	Whitehead Island (¾ knot cable).....	1½	I. D. Harvey.....	50 00 or commission	June 1, 1898	
	Totals.....	27¼	.....	825 00		

CAMPOBELLO SECTION.

	<i>Liberty Cove Cable Hut to</i>					
1	Welchpool.....	7½	Miss E. G. Vennell.. ..	210 00 and commis'on	Sept. 1, 1895	
2	Eastport, Maine, U.S.A....	½	J. Cushing.....	200 00	Dec. 26, 1881	
	Totals.....	8	.....	410 00		

* A cable of 1½ knots connects Welchpool with the landing ½ mile from Eastport; and a cable of 7¼ knots is laid from Long Eddy, Grand Manan, to Liberty Cove, Campobello.

SESSIONAL PAPER No. 19

CHICOUTIMI AND NORTH SHORE OF ST. LAWRENCE, TELEGRAPH SYSTEM.

CHICOUTIMI SECTION.

No.	Stations.	Inter- mediate. Distance.	Agents and Operators.	Salaries per annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Bay St. Paul.....	.....	F. Boivin.....	180 00 per annum.. { 5 p.c. commission.....*	Previous to April 1, 1885	*The commission on business is 25 per cent of the Government tolls of the line; the amount guar- anteed to be not less than \$50 per annum. Plus \$12 per annum for care of main battery. J. Fortin's division includes the branch line to L'Anse St. Jean. Plus \$12 per annum for care of main battery.
2	St. Urbain.....	9	A. Boivin.....	50 00 or commission	" 1, 1885	
3	La Cruche.....	37 {	Alphée Gauthier ..	50 00 "	Dec. 2, 1899	
4	St. Alexis.....	31½	A. Gauthier (repairer).....	216 00	May 15, 1887	
5	St. Alphonse de Bagotville.	3	Mrs. D. Simard.....	50 00 or commission	Nov. 1, 1894	
6	Chicoutimi.....	11½ {	A. Simard.....	50 00 "	April 1, 1885	
	Br. Line { St. Alexis .....	.....	G. N. W. Tel. Co.	25 p.c. commission.....	Nov. 1893	
	{ L'Anse St. Jean.	40	J. Fortin (repairer).....	400 00 per annum...	June 1 1897	
		.....	Mrs. R. Martel.....	50 00 or commission	Aug. 1, 1897	
	Totals.....	132		1,060 00		

GOVERNMENT TELEGRAPH SERVICE—Continued.
CHICOUTIMI AND NORTH OF ST. LAWRENCE TELEGRAPH SYSTEM—Continued.
NORTH SHORE (West of Bersimis).

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Murray Bay.....	0	Mrs. F. Vincent.....	50 00 or comm'n ...	Previous to April 1, 1885	
2	Cap à l'Aigle.....	4	N. Duchesne.....	50 00 "	June 1, 1888	
3	St. Fidèle.....	6	A. N. Parent.....	50 00 "	April 1, 1890	
4	Port au Persil.	7	{ A. Brassard	50 00 "	May 1, 1889	
			{ A. Brassard (repairer)....	210 00 "	June 1, 1897	
5	St. Siméon.....	4	D. Gaudin.....	50 00 "	Dec. 1, 1887	
6	Baie des Rochers.....	12	G. Savard.....	50 00 "	June — 1887	
7	Riv. aux Can.		{ G. Bouillenne.	100 00 "	Nov. — 1886	Mr. Bouillenne at River Canard has acted as repeat-
8	St. Etienne	17	{ E. Bouillenne (repairer) ..	210 00 "	Sept. 1, 1899	ing operator for the St. Etienne branch since
9	Tadousac (1¼ knot cable)...	13	J. E. Caron.....	50 00 or comm'n.....	Nov. 1, 1888	August, 1899.
10	Sacré Cœur.....	12½	L. Maltais.....	50 00 "	Dec. 6, 1901	
	Br. from Tadousac.					
11	Bergeronnes	15	M. Savard.....	50 00 "	April — 1885	
12	Escoumains	12	J. H. Topping.....	50 00 "	" — 1885	
13	Baie de Bacons	8	P. Bouchard.....	.....	May 6, 1892	Commission, at 25 per cent, without guarantee at
14	Mille Vaches.	8	J. A. Puisse.....	50 00 or comm'n.	April — 1885	Baie des Bacons.
15	Portneuf Mills.....	11½	.....	.....	.....	Closed November, 1895.
16	Portneuf light	6	{ S. Bouchard	50 00 or comm'n.	July 1, 1890	
17	Sault au Cochon	7	{ E. Courbron (repairer)...	420 00	April 1, 1888	Sault au Cochon closed September 30, 1896.
18	Bersimis.	31	{ Mrs. A. Laurier, agt & opr	500 00	Jan. 1, 1902	
			{	180 00 .....	.....
			E. Pope, dist. supt.....	600 00	April — 1885	
	*Totals.	174		2,870 00		

*NOTE.— In the estimates the maintenance of the Chicoutimi and North Shore lines is provided under head of North Shore Line. They are operated conjointly.

SESSIONAL PAPER No. 19

CHICOUTIMI AND NORTH OF ST. LAWRENCE TELEGRAPH SYSTEM—Continued. NORTH SHORE (East of Bersimis).

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	P'te aux Outardes (cable).. P'te Paradis (Manicouagan)	12	H. Tremblay.	50 00 or commission*	Dec. 1, 1896	
2	cable landing..... Scougalls Mills 14 mile loop line from P'te. Paradis ..	18	.....	.....	.....	The repeating office formerly at Manicouagan was re- moved to Bersimis in September, 1896.
3	River Godbout (cable).....	28	Accommodation office.....	25 p.c. commission.....	Aug. 1901	
4	Pointe des Monts.....	26	N. A. Comeau.....	50 00 or commission.	Oct. 15, 1885	
5	Trinity Bay West.....	18½	L. F. Faffard.	50 00 "	Dec. 28, 1883	
6	Trinity Bay East.....	5¼	Z. Poulin.	50 00 "	May 16, 1884	
7	Caribou Islands.....	2½	A. Bilodeau.....	Commission only.....	" 1, 1889	
8	Pointe aux Anglais.....	7	I. Comeau.....	"	Sept. 1, 1889	
9	Pentecost River.....	10½	Paul Côté.....	Accommodation office...	Jan. 10, 1895	No commission is paid at this office.
10	Ste. Marguerite.....	6½	E. H. Têtu, D. Supt.	1,080 00 per annum ..	Nov. 1, 1891	
11	Seven Islands	47½	A. Therriault.....	180 00 "	July 1, 1888	
12	River Moisie.....	22¾	{ P. E. Vignault, opr. { L. N. Caron.....	180 00 " 540 00 "	Jan. 2, 1884	
13	Little River	15½	J. Porier.....	50 00 or commission.	May 29, 1902	Plus 50 cents per day when absent on duty.
14	Sheldrake	57	Miss H. Leberge	50 00 "	June 1, 1896	
15	Thunder River.....	15	A. LeBerge	50 00 "	Oct. 10, 1900	
16	Magpie	6½	Mrs. H. Cody.....	50 00 "	" 1, 1897	
17	St. John's River	14	Geo. Molloy.....	50 00 "	Feb. 1, 1890	
18	Long Point.....	9	B. Chambers.....	50 00 "	Oct. 1, 1889	
19	Mingan.....	10	A. Maloney.....	560 00.....	" 1, 1889	
20	Pointe aux Esquimaux	7	M. J. Maloney.....	50 00 "	Sept. 21, 1896	Long Point is the repeating office for the Anticosti cable in operation since September 1, 1891.
21	Piastre Bay.....	24	D. C. Hould.....	Commission only.....	Oct. 1, 1889	The commission at Point aux Esquimaux is 50 per cent, without guarantee as to amount.
22	Aguanus.....	43	S. Tanguay.....	50 00 or commission.	May 21, 1893	
23	Natashquan	36¾	L. Cummings.....	100 00 "	Sept. 1, 1897	
24	Kagaska.....	16	E. Vignault	50 00 "	Oct. 2, 1897	
25	Big Romaine.....	33	A. Cormier.....	120 00 per annum.....	Sept. 16, 1898	
26	Pointe du Maurier.....	43	Miss R. A. Blais.....	50 00 or commission.	Jan. 1, 1899	
27	Harrington.....	48	J. Galabois.....	50 00 "	Sept. 21, 1898	
28	Baie des Moutons.....	20	Mrs. John Jones.....	125 00.....	July 19, 1900	
29	St. Augustin.....	37	A. Cormier (teacher).....	300 00.....	Jan. 10, 1901	
30	Bon Esperance (St. Paul's River)	54	W. Burgess.....	.....	Sept. 15, 1900	NOTE.—*The commission, except where other- wise stated, is 25 per cent of the Government line tolls on business handled. †The Belle Isle cable 22¼ knots connects with the office at Chateau Bay by a ½ mile of land line and with the lighthouse at Belle Isle by 1 mile land line.
31	Blanc Sablon.....	75	M. Chevelier. ....	.....	June 1, 1901	
32	Red Bay	35	Thos. Morel.....	.....	" 1, 1901	
33	Chateau Bay.....	54	Wm. Moore.....	.....	" 1, 1901	
34	+ Belle Isle (cable 22¼; land line 1½.....)	35	Jos. Maloney.....	300 00	June 8, 1901	
		23¾	{ J. Osborne, spl. agt. { J. T. Colton, opr.....	300 00 180 00	Sept. 14, 1901 " 14, 1901	
	Totals.....	916	.....	4,515 00		

GOVERNMENT TELEGRAPH SERVICE—Continued.

ONTARIO—PELEE ISLAND TELEGRAPH SERVICE.

No.	Stations.	Inter- mediate Distance.	Agents and Operators.	Salaries per Annum.	Date of Appointment.	Memo.
		Miles.		\$ cts.		
1	Leamington..	J. McR. Selkirk, D. Supt..	50 00.....	Nov. 1, 1888	The commission is on the tolls for the Government line.
2	Leamington Dock	2	F. Deslauriers	Accommodation office...	" 1, 1895	
3	Club House.	5	C. Harrison. . .	Commission 25 p.c	April 1, 1889	
4	Point Pelee.	5	W. A. Grubb.....	"	Nov. 1, 1888	
	Leamington Dock to North Point, cable.....	17	The cable formerly 9½ knots from Point Pelee to the Island is now laid as here indicated 17 knots. The change was effected in August, 1901.
5	North Point Lighthouse...	1	J. R. Ledwell.	Commission 25 p.c	June 1, 1899	
6	North Dock	2	C. B. Quick	"	Nov. 1, 1888	
7	McIntyre's Corners . . .	2½	Mrs. A. McIntyre	"	" 1, 1896	
8	West Dock . . .	2½	A. M. McCormick... ..	"	" 9, 1888	
9	South Dock.....	5½	T. W. Ferguson.....	"	July 1, 1900	
	Totals.....	42½		50 00		

NOTE.—This line is operated with telephones.

LINES IN THE NORTH-WEST TERRITORIES.

No.	Stations.	Inter- mediate Distance.	Agents.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Qu'Appelle-Edmonton Section.</i>	Miles.		\$ cts.		
1	Qu'Appelle.....	0	J. S. Macdonald, D. Supt ...	1,200 00	Jan. 1, 1898	The agent-operator at Qu'Appelle is joint with the C.P.R.
2	Fort Qu'Appelle.....	17	C. P. R. Tel. Co.	420 00	Dec. 1, 1896	
3	Touchwood.....	46	H. J. Macdonald, lineman...	360 00	" 1, 1899	
4	Humboldt	78	Miss E. Johnston... ..	600 00	March 1, 1885	
5	Saskatoon (14 miles loop) ...		A. VonLindeburgh.....	600 00	Nov. 1, 1883	Humboldt office was closed August 20, 1893. The agent-operator at Saskatoon is joint with the C.P.R.
6	Henrietta.....	69	C. P. R. Tel. Co.	300 00	Jan. 1, 1892	
7	Battleford	52	J. Harrington, repairer	600 00	" 1, 1888	
8	Bresaylor.....	47	W. Salsbury.....	720 00	Oct. 1, 1886	
9	Pitt	27	L. P. O. Noel.....	720 00	April 15, 1890	Closed since October, 1898. Lineman thereafter stationed at Onion Lake. Closed since June, 1902.
10	Onion Lake	62	J. T. Callahan, lineman	720 00	Dec. 1, 1900	
11	Moose.....	13	D. Noel	600 00	Oct. 1, 1900	
12	St. Paul de Metis.....	32½	H. McCleneghan	600 00	Oct. 1, 1900	
13	Saddle Lake.....	32	M. Therien	360 00	Dec. 1, 1899	A telephone line extends from the office at Saddle Lake to the Industrial School, 6½ miles. L. Picard having resigned, J. W. Carroll was transferred from Moose to Saddle Lake in June, 1902. Special connection for Mounted Police. The office at Edmonton has been operated jointly with the C. P. R. Tel. Co. since Jan. 1, 1892.
14	Victoria	37	J. W. Carroll.	600 00	Sept. 1, 1900	
15	Star.....	6	J. C. Gordon	600 00	April 1, 1899	
16	Fort Saskatchewan.. . . .	43	E. A. Holmes.....	50 p.c. com'n	May 28, 1901	
17	Edmonton.....	24	A. W. M. Campbell	600 00	Oct. 1, 1898	The St. Albert branch line is operated with telephones. It was leased to the Edmonton District Telephone Co. from October 24, 1895. Moosejaw office is operated jointly with the Canadian Pacific Telegraph Co.
	Branch Line— Edmonton.....	0	J. A. Macdonald.....	120 00	May 1, 1899	
	St. Albert.. . . .	9	S. B. McNamara.....	360 00	June 1, 1899	
			W. McKay, repairer	720 00	May 1, 1886	
	<i>Wood Mountain Section.</i>					
1	Moosejaw	0	A. Wilcox, agent.. . . .	240 00	Dec. 1, 1891	
2	Wood Mountain	90½	H. Sikes, repairer.....	600 00	" 1, 1893	
			J. H. Thompson, agent.....	300 00	" 1, 1890	
	Totals.....	698		11,940 00		

GOVERNMENT TELEGRAPH SERVICE—Continued.

GOVERNMENT TELEGRAPH SERVICE IN BRITISH COLUMBIA.

No.	Stations.	Inter- mediate Distance.	Agents.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Ashcroft—Barkerville.*</i>	Miles.	(See note in margin)	\$ cts.		
1	Ashcroft Station.....	0	C. A. Sherr	240 00	July 4, 1898.	NOTE.—This line which was formerly operated in conjunction with the C. P. Ry. Co. has, since May 1, 1901, been operated direct by the Department, and latterly as part of the Yukon telegraph system. Proportion of salary pertaining to this line. The Ashcroft office is operated jointly with the C. P. R. Telegraph. Closed June, 1901, and transferred temporarily to 108-Mile House. *The testing office formerly at 144-Mile House was discontinued in May, 1900.
2	Clinton	30	A. LeBourdais, agt. and rep.	600 00	Feb. 16, 1893.	
3	Bridge Creek (115-Mile House)	53	J. D. McIntosh	720 00	Jan. 1, 1900.	
4	150-Mile House* ..	40	S. T. Hall, agt. and oper....	456 00	Nov. 1, 1896.	
5	Sola Creek.....	38	G. H. Smith, agt. and rep....	900 00	March 1, 1896.	
6	Quesnelle.....	54½	J. E. Bowron, " ..	564 00	Prior to 1891.	
7	Stanley.....	48	Accommodation com. office..	.....	.....
8	Barkerville.....	13	J. Stone, agent and repairer.	1,000 00	Feb. 17, 1873.	
	Total.....	276½		4,480 00		
	<i>Ashcroft—Lillooet.</i>		(See note in margin).....		
	Ashcroft Station	0	C. A. Sherr.....	240 00	July 4, 1898.	NOTE.—This line which was formerly operated in conjunction with the C. P. Ry. Co. has, since May 1, 1901, been operated direct by the Department, and latterly in conjunction with the Yukon telegraph system. Proportion of salary pertaining to this line. The Ashcroft office is operated jointly with the C. P. R. Telegraph System.
1	Pavillion.....	40	Accommodation com. office..	.....	Dec. 1, 1896.
2	Lillooet.....	22	S. A. Macfarlane, agt. and op.	720 00	Jan. 3, 1896.	
	Total.....	62		960 00		

BRITISH COLUMBIA—Continued.

<i>Victoria—Cape Beale.</i>				(See note in margin)				NOTE.—The superintendence of this line has been in the hands of the resident engineer at Victoria since October, 1901, when the arrangement theretofore in operation with the C. P. Ry. Co. was terminated. Proportion of salary.
1 Victoria.....	0	E. Houghton, operator.	240 00	Nov. 1, 1891.				
2 Sooke.....	18	M. Milne, com. office.....	720 00	April 21, 1896.				
3 Otter Point.....	8	E. Gordon, agt. and operator.	540 00	Dec. 1, 1891.				
4 Jordan River.....	10	J. Goodie, "	720 00	May 1, 1897.				
5 Port San Juan.....	30	B. H. Kirkpatrick, "	240 00	July 1, 1900.				
6 Carmanah Lighthouse, (Clo-oose 2 miles west).....	24	W. P. Daykin, "	540 00	Nov. 1, 1891.				
		D. Logan, repairer.....	540 00	April 1, 1898.				
		Otto Rosander, repairer.....	540 00	March 6, 1901.				
7 Cape Beale.....	28	M. Patterson, agt. and oper'r.	120 00	Sept. 1, 1899.				
Total.....	118		3,660 00					†These three lines are operated by the Canadian Pacific Railway Co. for the Government, the arrangement being terminable at any time.

No.	Offices.	Inter- mediate Distance.	Agents, &c.	Positions.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Kamloops—Lower Nicola.</i>	Miles.			\$ cts.		
1	Kamloops.....	0	(See note in margin)..... A. J. Venn (C. P. Tel.)..	Agent.....	300 00	April 18, 1900. Connected.	NOTE.—This line is operated under the superin- tendence of the resident engineer at Victoria. The allowance was but \$180 per annum prior to March 1, 1901.
2	Quilchena.....	54	E. O. Rourke.....	Lessee.....	25 p. c. com.	May 1, 1900.	NOTE.—This line is operated with telephones. The lessees pay a monthly rent for the connections, and are allowed 25 per cent commission on local tolls for messages and conversations of non-subscribers.
3	Nicola Lake ..		A. R. Carrington..	" ..	"	" 1, 1900.	
4	" ..		A. E. House.....	" ..	"	" 1, 1900.	
5	Lower Nicola.....	13	Geo. Armstrong.....	" ..	"	" 1, 1900.	
	Total.....	67					

2-3 EDWARD VII., A. 1903

BENNETT—DAWSON---ATLIN.

(The requisite information to complete this table was not available at time of the preparation of the annual report).

No.	Stations.	Interme- diate Distance.
1	Ashcroft.....	0
2	Clinton.....	30
3	115-Mile House.....	55
4	150-Mile House.....	35
5	Soda Creek.....	42
6	Quesnelle	58
7	Barkerville (Branch from Quesnelle).....	61
8	Blackwater.....	51
9	Fraser Lake	105
10	Mauricetown.....	173
11	Hazleton	39
12	Skeena Canyon (Branch from Hazleton).....	83
13-14	Port Simpson and Aberdeen Canneries.....	125
15	Telegraph Creek.....	336
16	Atlin.....	214
17	Tagish.....	75
18	Cariboo Crossing.....	18
19	White Horse.....	47
20	Lower Labarge.....	59
21	Hootalinqua.....	30
22	Big Salmon.....	34
23	Five Fingers.....	96
24	Fort Selkirk.....	58
25	Selwyn.....	30
26	Stewart River	75
27	Ogilvie.....	23
28	Dawson	48
29	Forty-Mile.....	55
30	Northern Boundary.....	40
	Total.....	1,826

GOVERNMENT TELEGRAPH LINES.

SPECIAL TARIFF.

Cable messages.—Rates for cable messages and for press reports, passing over the Yukon line will be found in connection with other British Columbia lines in the following pages.

Elsewhere, the rate for transatlantic messages passing over the government lines is the same as for ordinary through messages, excepting where the ordinary tariff is more than 25 cents ; in such cases the government line rate is 4 cents per word, with a minimum charge of 25 cents. For example :—

For a message of six words or less the charge is 25 cents for government line.

For a message of seven words the charge is (7 x 4c.) 28 cents for government line.

For a message of twelve words the charge is (12 x 4c.) 48 cents for government line.

In every case the counting of words includes the address and signature in the same way as for transatlantic cable tolls.

Press despatches.—The rate for press despatches on the government lines (excepting the Yukon line), formerly a quarter cent per word, has been changed to 20 cents per 100 words ; no single message less than 20 cents.

For the Yukon line the rate is 1 cent per word, minimum charge \$1 ; this applies to the whole line.

REGULAR TARIFF.

NOVA SCOTIA.

Line from North Sydney to Meat Cove and Mabou—Local rate 25-1 (13 offices).*

Big Bras d'Or.....	Through rate 15-1 from North Sydney, W. U. office.		
New Campbellton's (Kelly's Cove)	"	"	"
Port Bevis.....	"	"	"
Englishtown	"	"	"
Baddeck.....	"	"	"
St. Anne, South Gut:.....	"	"	"
French River.....	"	"	"
South Ingonish.....	"	"	"
Ingonish.....	"	"	"
Neil's Harbour.....	"	"	"
Dingwall.....	"	"	"
Aspy Bay.....	"	"	"
Meat Cove.....	"	"	"
Pleasant Bay.....	"	"	"
Cheticamp.....	"	"	"
Grand Etang.....	"	"	"
North-East Margaree.....	"	"	"
Margaree Harbour.....	"	"	"
South-West Margaree.....	"	"	"
Broad Cove.....	"	"	"

Night messages are exchanged with the Western Union Telegraph Company for offices on this line. Rate 1 cent per word with minimum of 15 cents. The local night rate is 1 cent per word with minimum of 25 cents.

* N.B.—When the tariff rate is entered as 25-1 or 50-2, &c., the meaning is that the rate is 25 cents or 50 cents for ten words and 1 cent or 2 cents for each additional word.

Line from Barrington to Cape Sable—Local rate 12-1 (2 offices).

Newellton.....	Through rate 12-1 from Barrington, W. U. office.
Cape Sable Lighthouse.....	" " "
This line is now operated by the local telephone company. Terms of lease provide for former telegraph rate as above not being exceeded.	

NEW BRUNSWICK.

Line from Chatham to Point Escuminac—Local rate 25-1 (4 offices).

Bay du Vin.....	Through rate 15-1 from Chatham, G. N. W. office.
Lower Hardwicke.....	" " "
Escuminac.....	" " "
Pt. Escuminac Lt. House.....	" " "

*Line from Eastport, Me., to Campobello, Grand Manan, and Whitehead Islands (9 offices)—
Local rates between offices on Grand Manan, and Whitehead Islands 15-1 ; Grand Manan and Campobello Island 25-2 ; The Islands and Eastport, Me., 25-2. W.U.O.*

Welchpool, Campobello.....	Through rate 25-2 from Eastport, Me., W. U. office.
Flagg's Cove, Grand Manan.....	" " "
Castalia	" " "
Woodward's Cove.....	" " "
Grand Harbour.	" " "
Seal Cove	" " "
Southern Head.....	" " "
Cheney's Head.....	" " "
Whitehead Islands.....	" " "

QUEBEC.

Line from Gaspé to Anticosti Island, Q. (9 offices)—Local rates between offices on the Island 25-1 ; Gaspé and the Island offices 50-2.

South-West Point	Through rate 50-2 from Gaspé, G. N. W. office.
Salt Lake.....	" " "
Shallop Creek.....	" " "
South Point.....	" " "
Heath Point.....	" " "
Fox Bay.....	" " "
Becscie River.....	" " "
West Point.....	" " "
English Bay.....	" " "

Line from Meat Cove, C.B., N.S., to Magdalen Islands, Q. (8 offices)—Local rates between offices on the Island 25-1 ; Meat Cove and the Islands 50-2 ; offices on the Meat Cove line and the Islands 50-2.

Amherst Island.....	Through rate 50-2 from North Sydney, W. U. office.
Amherst Lt. House.....	" " "
Etang du Nord Village.....	" " "
Etang du Nord Lt. House.....	" " "
Cap aux Meules (Grindstone)...	" " "
House Harbour.....	" " "
Grosse Isle.....	" " "
Grand Entry.....	" " "

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Line from Meat Cove, C.B., N.S., to St. Paul's Island—Local rate between offices on Meat Cove line and St. Paul's 50-2 (1 office).

St. Paul's Island Lt. House 50-2 from North Sydney, N.S., W. U. office.

Line from Quebec to Grosse Isle Quarantine Station (7 offices)—Local rates between offices on Orleans Island and Isle Réaux 15-1 ; on Orleans Island, Isle Réaux and Quebec 15-1 : on Orleans Island and Grosse Isle 25-1 ; on Isle Réaux and Grosse Isle 15-1.

St. Pierre, Orléans Island.....	Through	rate 15-1	from	Quebec, G. N. W. office.
Ste. Pétronille.....	"	"	"	"
St. Laurent.....	"	"	"	"
St. Jean.....	"	"	"	"
St. François.....	"	"	"	"
Isle Réaux.....	"	"	"	"
Grosse Isle.....	"	25-1	"	"

Line from Baie St. Paul to Chicoutimi (6 offices).

For business with offices west of Baie St. Paul and terminating at Quebec, add 15c. and 1c. to the government line tariff.

For business with offices west of Baie St. Paul, beyond Quebec, add the full rate of the Great North-Western Telegraph Company to the government line tariff

Line from Murray Bay to Chateau Bay (48 offices) with branch to Anticosti and extension to Belle Isle.

For business with offices west of Murray Bay and terminating at Quebec, add 15c. and 1c. to the government line tariff.

For business with offices west of Murray Bay, beyond Quebec, add the full rate of the Great North-Western Telegraph Company to the government line tariff.

Local rates between offices not more than 100 miles apart 15-1 ; more than 100 miles apart 25-1 ; on mainland and Anticosti 50-2 ; and on mainland and Belle Isle 50-2.

St. Urbain.....	15-1	from	Baie St. Paul (Ck. Que.)	G. N. W. office,
Lacruche.....	"	"	"	"
St. Alexis.....	"	"	"	"
L'Anse St. Jean.....	"	"	"	"
St. Alphonse de Bagotville.....	"	"	"	"
Chicoutimi.....	"	"	"	"
Cap à l'Aigle.....	15-1	from	Murray Bay (Ck. Que.)	G. N. W. office.
Ste. Fidèle.....	"	"	"	"
Port au Persil.....	"	"	"	"
St. Siméon.....	"	"	"	"
Baie des Rochers.....	"	"	"	"
Rivière aux Canards.....	"	"	"	"
St. Etienne.....	"	"	"	"
Tadoussac.....	"	"	"	"
Bergeronnes.....	"	"	"	"
Escoumains.....	"	"	"	"
Baie des Bacons.....	"	"	"	"
Mille Vaches.....	25-1	"	"	"
Portneuf Mills.....	"	"	"	"
Portneuf Light.....	"	"	"	"
Sault au Cochon.....	"	"	"	"
Betsiamis (Bersimis).....	"	"	"	"

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Manicouagan (Pt. Outardes).....	25-1	from Murray Bay (Ck. Que.)	G. N. W. office
River Godbout.....	"	"	"
Pointe des Monts.....	"	"	"
Trinity Bay, West.....	"	"	"
Trinity Bay, East.....	"	"	"
Caribou Islands.....	"	"	"
English Point.....	"	"	"
Pentecost.....	"	"	"
Ste. Marguerite.....	"	"	"
Seven Islands.....	"	"	"
River Moisie.....	"	"	"
Little River.....	"	"	"
Sheldrake.....	"	"	"
Thunder River.....	"	"	"
Magpie.....	"	"	"
St. John River.....	"	"	"
Long Point.....	"	"	"
Mingan.....	"	"	"
Point Esquimaux.....	"	"	"
Piastre Bay.....	"	"	"
Aguanus.....	"	"	"
Natashquan.....	"	"	"
Big Romaine.....	"	"	"
Pointe du Maurier.....	"	"	"
Harrington.....	"	"	"
Baie des Moutons.....	"	"	"
St. Augustin.....	"	"	"
Bonne Espérance (St. Paul's River).	"	"	"
Blanc Sablon.....	"	"	"
Red Bay.....	"	"	"
Chateau Bay.....	"	"	"
Belle Isle.....	50-2	"	"
Anticosti Id. via Long Point....	"	"	"

ONTARIO.

Line from Leamington to Pelee Island (Telephone Circuit)—Local rates between Leamington and Point Pelee 15-1 ; mainland and Island offices 25-1 ; offices on the Island 15-1 (8 offices).

Gun Club House, mainland.....	15-1	(thro' business) from Leamington,	G. N. W.
Pointe Pelee, mainland.....	"	"	"
Leamington Dock.....	"	"	"
North Pt. Lt. H'se Pelee Island.	"	"	"
North Dock, Pelee Island.....	"	"	"
McIntyre's Corners.....	"	"	"
West Dock, Pelee Island.....	"	"	"
South Dock.....	"	"	"

NORTH-WEST TERRITORIES.

Line from Qu'Appelle (C. P. R. Sta.) to Edmonton, Alberta—Local rates, 15-1, 25-2, 50-3 for distances 10 to 600 miles (13 offices).

Fort Qu'Appelle.....	25-2	Qu'Appelle or Saskatoon.
Touchwood.....	"	"
Saskatoon (Ts. office C. P. R. Tel.)	"	"
Henrietta.....	"	"
Battleford.....	"	"

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Bresaylor.....	25-2	Saskatoon ; 50-3	Qu'Appelle or Edmonton.
Onion Lake.....	"	"	"
Moose.....	"	"	"
St. Paul de Métis.....	50-3	Saskatoon,	Qu'Appelle or Edmonton.
Saddle Lake.....	"	"	"
Victoria.....	25-2	Edmonton ; 50-3	Qu'Appelle or Saskatoon.
Fort Saskatchewan.....	"	"	"
Edmonton (Transfer office C. P. R. Tel.).....	"	"	"

Line from Moosejaw (C. P. Stn.) to Wood Mountain—Local rates 25-2 (1 office)

Wood Mountain.....	25-2	from Moosejaw.
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BRITISH COLUMBIA.

Line from Victoria to Cape Beale—Local rate 50-3 (6 offices).

Sooke.....	50-3	from Victoria C. P. R. Tel. office.
Otter Point.....	"	"
Jordan River.....	"	"
Port San Juan.....	"	"
Carmanah Lt. House.....	"	"
Cape Reale.....	"	"

Line from Nanaimo to Comox—Local rate 25-2 (9 offices).

Wellington (C.P.R. & E. & N. Ry.).....	25-2	from Nanaimo.
Parksville.....	"	or Wellington.
Fanny Bay.....	"	"
Cumberland.....	"	"
Union Bay.....	"	"
Union Mines.....	"	"
Courtney.....	"	"
Comox.....	"	"
Alberni (branch).....	"	"

Line from Alberni to Cape Beale—Local rate 50-3.

Between offices on the Victoria-Cape Beale line and the Nanaimo-Comox line, via Alberni, 50-3.

Line from Ashcroft (C. P. R. Stn.) to Barkerville—Local rates 25, 50, 75 (9 offices).

Clinton.....	25-2	from Ashcroft C. P. R. Tel. office.
Bridge Creek.....	"	"
150-Mile House.....	50-3	"
Soda Creek.....	"	"
Quesnelle.....	"	"
Stanley.....	"	"
Barkerville.....	"	"
Lillooet (branch).....	"	"
Pavillion (on Lillooet branch).....	"	"

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YUKON TELEGRAPH LINE.

THROUGH TARIFF TO AND FROM ASHCROFT.

(IN EFFECT FROM JUNE 1, 1902.)

Names of Offices.	LINE MILEAGE.		Tariff.
	Inter-mediate.	Pro-gressive.	
			\$ cts.
Ashcroft.	0	0	0 0
Clinton.....	30	30	0 25 & 2
115-Mile House.....	55	85	0 25 & 2
150-Mile House.....	35	120	0 50 & 3
Soda Creek.....	42	162	0 50 & 3
Quesnelle.....	58	220	0 50 & 3
Barkerville (branch from Quesnelle).....	61	281	0 50 & 3
Blackwater ..	51	271	0 75 & 5
Fraser Lake.....	105	376	0 75 & 5
Mauricetown.	173	549	1 25 & 10
Hazleton.....	39	588	1 25 & 10
Skeena Canyon (branch from Hazleton).....	83	671	1 25 & 10
Port Simpson.....	116	787	1 50 & 10
Telegraph Creek.....	336	924	1 75 & 10
Atlin.....	214	1,136	2 00 & 15
Tagish.....	75	1,213	2 25 & 15
Cariboo Crossing.	18	1,231	2 25 & 15
White Horse.....	47	1,278	2 50 & 15
Lower Labarge.	59	1,337	2 50 & 15
Hootalinqua.	30	1,367	2 50 & 15
Big Salmon	34	1,401	2 50 & 15
Five Fingers.....	96	1,497	2 75 & 15
Fort Selkirk.	58	1,555	2 75 & 15
Selwyn.....	30	1,585	2 75 & 15
Stewart River.....	75	1,660	3 00 & 20
Ogilvie ..	23	1,683	3 00 & 20
Dawson	48	1,731	3 00 & 20
Forty-Mile.....	55	1,786	3 25 & 20
Northern Boundary	40	1,826	3 25 & 20

The rates given above for points north of Quesnelle are one third less than those primarily adopted which were calculated on the general basis of 50 cents for 100 miles and 25 cents for each additional 100 miles, counting the distance from Ashcroft.

The local rates between offices north of Quesnelle are calculated on the basis of 50 cents for 100 miles and 25 cents for each additional 100 miles, and the local rates between offices north of Atlin are fixed at 50 cents for each 100 miles.

Cable messages (transatlantic, &c.) The uniform word rate of 40 cents for the Yukon line is discontinued. For cable messages the word rate is now fixed at twice as much as the additional word rate given in the list for all points north of Ashcroft. For example, Barkerville 3c. x 2 = 6c. for cable word rate; and Dawson, 20c. x 2 = 40c. per word, to or from Ashcroft.

Summary.

Offices on government lines, as listed.....	207
Offices at transfer points with connecting lines.....	15
Total number embraced by the service.....	222

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GOVERNMENT TELEGRAPH SERVICE.
BRITISH COLUMBIA.

No.	Office.	Inter- mediate Distance.	Agents, &c.	Positions.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Nanaimo-Comox.</i>	Miles.			\$ cts.		
1	Nanaimo.....	0	{ W. F. Archibald. A. M. Oliver, joint with C.P.R.	Agent and operator....	306 00	Mar. 1, 1896	The amount comprises \$20 per month for agency and operation, \$3 for messenger service and \$2.50 for battery care.
2	Wellington..	5	E. & N. Ry. Co....	Assistant operator.....	120 00	June 1, 1902.	
3	Parksville ..	23	{ Mrs. R. Williams Geo. Williams...	Agent and operator....	Commission.....	April 1, 1893.	
4	Fanny Bay ..	23	Thos. Hudson ..	Repairer..	360 00	Feb. 1, 1902.	Payment was \$240 prior to Feb. 1, 1902.
5	Union Bay....	9½	E. McDonald.....	"	570 00	" 1, 1897.	
6	Union Mines....		J. Dunsmuir.....	Agent and operator ...	780 00	Nov. 17, 1898.	
7	Cumberland....	10	Albert Peacy	Accommodation office.	360 00	June 3, 1898.	
				Agent and operator ..	120 00	.....	See mention of this in body of report (1897-98)
8	Courtney ..	7	.....	.....	and com. 25 p.c.	April 28, 1898.	
9	Comox.....	3½	M. McDonald ..	Agent and operator....	360 00	.....	Courtney and Fanny Bay are communicated with by telephone at pre-arranged intervals.
	Total.....	81			and com. 25 p.c.	Nov. 1, 1895.	
	<i>Parksville- Cape Beale.</i>				2,976 00		
	Parksville.....	0	(See above)....	.....	.....	.....	*NOTE.—The repairing of this Alberni-Cape Beale line necessitates the use of a steamboat, and has been contracted for with M. G. A. Huff at \$75 per month covering all charges.
1	Alberni.....	29½	{ C. T. Haslam .. P. A. Haslam...	Agent and operator....	720 00	June 27, 1895.	Proportion of salary pertaining to this line.
	Alberni.....		G. A. Huff.....	Assistant and operator.	120 00	Oct. 1, 1899.	
2	Cape Beale.	57	M. Patterson.....	Con. repairer*	900 00	May 1, 1900.	
	Total.	86½		Agent and operator....	240 00	" 1, 1900.	

The above lines are operated by the Government through the office of the Resident Engineer at Victoria.

PART VI

REPORT OF THE COLLECTOR OF REVENUE

DEPARTMENT OF PUBLIC WORKS

1901-1902

COLLECTION OF REVENUE

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, November 22, 1902.

F. GELINAS, Esq.,
Secretary, Department of Public Works,
Ottawa.

SIR,—I have the honour of submitting my report for the year ended June 30, 1902.

I have examined the books and accounts of all the officers under my control (excepting those of the dock master at Esquimalt) and it is my pleasing duty to state that in all cases the rules laid down for their guidance by the department have been carefully observed by these officers, who have faithfully accounted for all the revenues collected by them.

I regret to have to report that during the past fiscal year the revenue accrued from public works shows a decrease of \$20,605.01 compared with that of the year 1900-01, the total amounting to \$92,070.81, while the previous year it was \$112,675.82; the collections also fell short in the sum of \$7,654.85, being in all \$95,431.56 and in 1900-01 they amounted to \$103,086.41.

The revenue from slides and booms was \$53,975.18 or \$23,247.16 less than the preceding year, it is only fair to repeat the remark made as to this account last year, viz.: that included in the accruals of 1900-01 was the sum of \$12,068.62 from the Newcastle district which was the accumulation of seven years dues:—the collections amounted to \$57,335.93, being \$10,297 less than the previous year.

The graving docks yielded \$37,348.98 or \$2,613.82 more than in 1900-01.

From the locks the receipts were \$545.65 against \$718.32 in the year before, showing a decrease of \$172.67.

Rent of an unused building and privilege of laying tracks for a railroad across a bridge gave \$201.

Having dealt with the revenue in a general way, I beg to submit the particulars in detail relating to the several services under their respective heads.

SLIDES AND BOOMS.

OTTAWA DISTRICT.

The tolls charged up amounted to \$37,923.23, or \$5,908.27 less than for 1900-01.

The number of saw-logs that passed through the works was 3,287,731, or 132,095 less than the preceding year.

Of square timber there were 15,834 pieces against 894 in 1900-1901.

All the revenue accrued in this district during the year just closed was collected.

Of the dues accrued since July 1, 1889, when this department took over the collection, there remains uncollected \$9,836.30; full particulars of which will be found in statement No. 2 herewith.

Of the dues accrued prior to July 1, 1899, there remains uncollected \$56,805.65, all of which should be written off. See statements Nos. 1 and 3 herewith for details.

The accounts for the Ottawa district stand thus:

Dues accrued during the year 1901-02 \$37,923.23. All collected.

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The amount outstanding uncollected is the same as at the close of the previous year, the amount year by year being as follows:—

Dues accrued prior to, the collection being transferred to this department.....	\$ 56,805 65
Dues of 1889-90.....	\$ 6,903 05
“ 1890-91.....	28 42
“ 1892-93.....	379 80
“ 1896-97.....	196 71
“ 1900-1901.....	2,328 32
	<hr/> 9,836 30

I would ask particular attention to the fact that since this department assumed the collection of these dues: of the amount accrued, viz.:—\$707,823.21, all but \$28.42 absolutely owing to the department has been collected:—the remainder above shown and aggregating \$9,807.88, being composed of Chaudiere boomage \$6,903.05 which should have been written off long ago and the balance being covered by counter claims which, if my information with regard to them be correct, ought to be allowed.

Herewith are statements in detail:

No. 1.—Statement of amounts outstanding prior to July 1, 1889, uncollected September 30, 1902.

No. 2.—Statement of dues accrued at Ottawa since July 1, 1889, uncollected September 30, 1902.

No. 3.—Statement of amounts accrued at Quebec prior to July 1, 1889, uncollected September 30, 1902.

No. 4.—Statement of the number of pieces of square timber, saw-logs, &c., which passed through the Ottawaworks during the year ended June 30, 1902.

No. 5.—Statement of dues accrued from each of the slides and works in the Ottawa district during the year ended June 30, 1902.

The summer of 1901 was a most remarkable one, it being perhaps not too much to say, that not in the memory of man was the water in the tributaries, especially the northern ones, of the Ottawa River known to be so scarce.

That the falling off in the revenue, as compared with the previous year may be justly attributed to this cause, seems to be borne out by the fact that, with the exception of the Black River, which shows an increase of \$1,221.29, all the other tributaries give decreases, the works on the main Ottawa yielded practically the same amount as the previous year, being only \$14.17 more for the year just closed.

Before closing these remarks on the Ottawa District, I would again respectfully urge the desirability of having the question of the arrears appearing as uncollected, brought before the Public Accounts Committee, not only for the Ottawa District but those from the other districts as well, so as to obtain the authority of Parliament to write them off, as they are a source of friction between the Government and the individuals interested, frequently preventing settlement of accounts justly due individuals, while the amounts standing against them should have been written off long ago.

ST. MAURICE DISTRICT.

The revenue from this district was \$13,565.48,—less than the preceding year by \$7,756.74.

All the dues of the year 1901-2 were collected. Since I took charge of this district in 1892, all the revenue accrued has been collected.

The amount outstanding remains the same as at the close of the preceding year, namely \$14,481.49, all of which should be written off for reasons assigned in Statement No. 6 herewith.

The great falling off was due to two causes, first the early spring curtailing operations and the unprecedentedly low water during the summer, owing to which a large

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number of logs were left in the river all last winter, and all of which, had the spring of 1902 opened up with freshets, as usual, would have gone out into the St. Lawrence, involving great loss, not only to the lumbermen, but also to the Government, in dues. Fortunately a kind Providence so ruled, that the ice went out so gradually that the booms at Three Rivers were all in place before these logs came down and were all saved at that point, it is no exaggeration to say that, never did so few logs go out into the St. Lawrence in the spring with the ice, since the mills were established at Three Rivers, as got away this year.

If there was great scarcity of water in the River St. Maurice last year, the reverse was the case in June last, when it unexpectedly rose to such a point that several booms opened by reason of chains breaking, and it needed but a slight further rise to bring the water over the piers at the Piles and Grand'Mère, in which case all the logs in the St. Maurice would have gone into the St. Lawrence.

These sudden fluctuations in this river, in view of the magnitude of the interest involved, both public and private, seem to point to the necessity of providing in the near future a means of retaining the waters of the great lakes at its head in the early spring and so preventing such disastrous floods as have occurred in the past whereby not only the lumbermen suffered great loss of property, but the Government also through the works being carried away or damaged lost heavily, even in recent years, with such a system for retaining the water in the spring, the supply during the dry months or mid-summer could be regulated and much of the difficulties experienced last year, if not overcome, at least modified to a great extent, as the forests are being denuded so rapidly the snow melts more quickly than formerly in the spring, the water so resulting together with the usual spring rains coming all at once, form a flood that is likely to be greater every year as time goes on.

The department is interested in a large degree in devising such a system as suggested, having such large sums invested in the works on the St. Maurice, and moreover if the logs are not prevented from going into the St. Lawrence, not only the lumberman is the loser but the Government is deprived of the revenue which it would otherwise have derived from the timber.

Such a scheme if my information is to be relied on, would not cost a very large sum, in comparison with the interests involved, and I feel confident that not only the lumbermen and the manufacturers whose mills are driven by water, as well as the Provincial Government would gladly contribute to its cost and maintenance.

Early in January last the Belgo-Canadian Pulp Company's mill at Shawenigan Falls began work.

I may say here that lest any one might be carried away by an exaggerated idea of quantity, when the millions of logs taken out on the St. Maurice is mentioned, that the vast majority of the logs are spruce and a very great portion of them are very small, as they take, for making pulp, every thing down as low as five inches at the top, in fact I am not too sure that those of four inches are not drawn out.

Last year I collected the rental for a mill site on departmental property at Three Rivers, but the lease having been sent to the Inland Revenue Department, the rent for the current year has been collected by them.

NEWCASTLE DISTRICT.

The dues accrued from this district during the year amounted to \$2,486.47, all of which was collected.

Of the balance outstanding uncollected on July 1, 1900, viz.: \$11,828.46, \$3,360.75 was collected, \$498.18, overcharges, written off, leaving uncollected June 30 last, \$7,969.53, of which \$3,521.19 should be written off in accordance with a decision in the Exchequer Court; the remainder consists of two accounts in the hands of the Department of Justice for collection.

See statement No. 7 for details of amounts outstanding.

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GRAVING DOCKS.

ESQUIMALT GRAVING DOCK.

The revenue from this source, shown in detail in statement No. 8 herewith, was \$14,502.24, being \$2,154.37 more than in 1900-1901.

Of the 180 days the dock was occupied during the year, it was used by vessels of the British navy for 85 days, Canadian Government vessels for 4 days, while the mercantile marine used it for 91 days.

LÉVIS GRAVING DOCK.

The revenue from this work was \$274.49 more than for the previous year, being \$17,997.

The dock was occupied for 119 days, exclusive of the winter months, during which time it was occupied by the steamer *Campana* and the Government dredges *Laval* and *No. 9*.

KINGSTON GRAVING DOCK.

The dock was occupied for 78 days, exclusive of winter months, and for 63 days from Dec. 16, 1901 to Feb. 17, 1902.

The income was for the past year \$4,849.74, \$184.96 more than the previous year. See statement No. 10.

LOCKS.

RIVIÈRE DU LIÈVRE LOCK.

The tolls collected amounted to \$279.44, being \$26.49 more than for the year ending June 30, 1901.

RIVIÈRE YAMASKA LOCK.

The receipts from this source were \$266.21, or \$199.16 less than the previous year.

RENTS.

From rooms in the Thistle building \$200 were received and for the privilege of laying tracks across the bridge near Edmonton, the Edmonton, Yukon and Pacific R.R. Co. paid the nominal rent of \$1.

Thus the total revenue that passed through my hands during the year ended June 30, 1902, may be summarized as follows :—

From Slides and Booms	\$57,335 93
Graving docks.....	37,348 97
Locks	545 65
Rents	201 00
	<hr/>
	\$95,431 56

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The following comparative table of Public Works Revenue accrued 1901-02 and 1900-01 shows at a glance in what accounts the decreases and increases above referred to occurred :—

	Year, 1901-1902.	Year, 1900-1901.	Increase, 1901-1902.	Decrease, 1901-1902.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
SLIDES AND BOOMS.				
Ottawa District..	37,923 23	43,831 50	.....	5,908 27
St. Maurice District.....	13,565 48	21,322 22	.....	7,756 74
Newcastle District.....	2,486 47	12,068 62	.....	9,582 15
	53,975 18	77,222 34	.....	23,247 16
GRAVING DOCKS.				
Esquimalt.....	14,502 24	12,347 87	2,154 37	.....
Lévis.....	17,997 00	17,722 51	274 49	.....
Kingston.....	4,849 74	4,664 78	184 96	.....
	37,348 98	34,735 16	2,613 82	.....
LOCKS.				
Rivière du Lièvre.....	279 44	252 95	26 49	.....
Rivière du Yamaska.....	266 21	465 37	.....	199 16
	545 65	718 32	13 26	185 93
Rents.	201 00	.....	201 00	.....

In conclusion, I have to acknowledge the uniform courtesy and cheerful assistance accorded me at all times by the officers with whom I have been brought in contact during the year.

I have the honour to be, respectfully, sir,

Your very obedient servant,

EDWARD T. SMITH,
Collector of Public Works Revenue.

2-3 EDWARD VII., A. 1903

No. 1. STATEMENT of Slidage and Boomage from the Ottawa Slides and Works, accrued prior to July 1, 1889, Outstanding June 30, 1902, and remaining uncollected on September 30, 1902.

By Whom Due.	Bad and Doubtful Debts.	Chaudière Boomage in Suspense.	Other Slide and Boom Dues Disputed.	Total Outstanding on Sept. 30, 1902.	Year to which Dues Belong.	Remarks.
John & Wm. McLean	\$ 53 14	*	\$	\$ 53 14	1873.....	Insolvent.
John Rowan.	342 50	..	..	342 50	1872-1873.....	"
Lemieux & Charette ..	21 30	..	..	21 30	1873.....	"
Tailon & Lapierre.....	148 10	..	..	148 10	1873-1874.	"
Mosgrove & McHarry. .	261 42	..	..	261 42	1873-1874.	"
W. C. Wells.....	600 90	..	..	600 90	1873-1874.....	"
Dufresne & McGarity ..	528 80	..	..	528 80	1874-1875.....	"
Walton Smith	171 46	..	..	171 46	1874-1875.....	"
A. H. Baldwin	3,507 92	..	..	3,507 92	1871 to 1874.....	"
Hon. James Skead.....	9,807 65	..	..	9,807 65	1861, 1863, 1864, 1869, 1875 to 1878.....	"
Batson & Currier	5,558 70	..	..	5,558 70	1875 to 1877.	"
A. F. A. Knight.....	546 30	..	..	546 30	1878.....	"
James Walker.....	11 25	..	..	11 25	1877.....	"
R. Campbell & Son ..	1,558 50	..	..	1,558 50	1879 to 1881.....	"
James G. Bryson	73 50	..	..	73 50	1886.....	"
Costello Bros.....	90 62	..	..	90 62	1882.....	"
N. E. Cormier	428 34	..	..	428 34	1888.....	"
James Yuill.....	9 29	..	..	9 29	1876.....	Overcharge.
J. & B. Grier.....	76 84	..	..	76 84	1883.....	"
R. & W. Conroy.....	95 42	..	..	95 42	1882-1883.....	"
A. & P. White.....	101 00	..	..	101 00	1881.....	"
B. Caldwell & Son ..	4 33	..	..	4 33	1887.....	"
J. R. Booth .....	..	9,871 93	398 88	10,270 81	1881 to 1888.....	reported in return S-38, for March, 1886.
Perley & Pattee.....	..	8,889 85	..	8,889 85	1881 to 1888.....	\$398.88, counter claim for damages by the breaking of Coulonge Boom.
The Bronsons & Weston Lumber Co.	..	8,180 79	..	8,180 79	1881 to 1888.....	"
Pierce & Co. ....	..	462 18	..	462 18	1888.....	"
G. A. Grier & Co.....	..	1,060 59	..	1,060 59	1886-1887.....	* Chaudière boomage. These parties claim that they have maintained these works wholly at their own expense since 1881.
Estate late Levi Young ..	..	1,461 20	..	1,461 20	1881 to 1885.....	"
Wm. Mason.....	..	413 85	..	413 85	1881 to 1888.....	"

SESSIONAL PAPER No. 19

Gilmour & Co.....	406 27	1884	Counter claim for damage by breaking of Coulouge Works.
John Rochester.....	258 88	.....	1881 to 1883.....
J. & G. Bryson.....	.....	..... 252 20	1886.
	23,997 28	31,006 54	55,653 90	

EDWARD T. SMITH,
Collector of Slide and Boom Dues.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, September 30, 1902.

Name.	Year to which Dues Belong.	Chaudiere Boomage in Suspense.	Ordinary Dues.	Total Outstanding	Remarks.
		\$ cts.	\$ cts.	\$ cts.	
J. R. Booth	1889-90	2,561 69	2,561 69	Chaudiere Boomage reported to Council, and referred to the Treasury Board, should be written off.
The Bronsons & Weston L. Co.	1889-90	2,056 96	.....	2,056 96
Perley & Pattee.....	1889-90	1,203 26	.....	1,203 26
Wm. Mason & Sons.....	1889-90	167 66	.....	167 66
Pierce & Co.	1889-90	913 48	.....	913 48
Alex. Fraser, acc't. Thos. Stephens	1890-91	28 42	28 42	Legal action taken to recover this. { Retained by Mr. Booth in settlement of an account due him which the Auditor General refuses to pay, as Mr. Booth appeared to be in arrears in this and Statement No. 1. Have counter claim for work done on slide to this amount. Have counter claim for damages to logs in consequence of break in Black River slide.
J. R. Booth	1892-93	.....	379 80	379 80
Bryson & Fraser	1896	.....	196 71	196 71
McLachlin Bros	1900	.....	2,328 32	2,328 32
		6,903 05	2,933 25	9,836 30	

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, September 30, 1902.

EDWARD T. SMITH,
Collector of Slide and Boom Dues.

SESSIONAL PAPER No. 19

No. 3.—STATEMENT of Outstanding Slide Dues, Ottawa District, Bonds for which were sent to Québec for Collection.

Name.	From 1860.	From 1861.	Total.
	\$ cts.	\$ cts.	\$ cts.
Hon. James Skead.....	245 00	210 00	455 00
James Mair.....	.....	696 75	696 75
	245 00	906 75	1,151 75

These amounts were uncollected, as the parties claimed damages for loss caused by the Madawaska boom breaking in 1860.

A decision on their claims was not arrived at till August 2, 1869. On the 5th idem Messrs. Skead and Mair were notified that the department could not recognize their claim.

To the best of my knowledge, this decision was never communicated to the collector of slide dues, consequently these accounts remained in abeyance.

Since then both parties died, and I believe both were insolvent at the time of their death.

EDWARD T. SMITH,
Collector of Slide and Boom Dues.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, September 30, 1902.

No. 4.—STATEMENT of the number of pieces of square timber, saw-logs, &c., that passed through the government slides and works on the River Ottawa and its tributaries during the fiscal year ended June 30, 1902.

	Pieces.
Square timber.....	15,834
Saw logs.....	3,287,731
Boom and dimension timber.....	69,871
Cedars.....	89,567
Rail road ties.....	657,281
Fence posts.....	389,089
Total.....	4,509,373

Also 24,083 $\frac{5}{6}$ cords pulp wood.

Revenue accrued on the above was \$37,923.23.

EDWARD T. SMITH,
Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, June 30, 1902.

No. 5.—STATEMENT showing the dues accrued on the undermentioned works of the Ottawa River and its tributaries during the fiscal year ended June 30, 1902.

River and other Improvement.	Amount.
Main Ottawa.....	\$ 3,948 81
Cheneaux Boom.....	6,287 59
River Petewawa.....	4,959 53
" Madawaska.....	3,814 74
" Coulonge.....	4,644 03
" Dumoine.....	438 94
Black River.....	6,516 10
Gatineau.....	7,313 49
	<hr/>
	\$37,923 23

Amounting to \$37,923.23.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, June 30, 1902.

EDWARD T. SMITH,
Collector of Public Works Revenue.

No. 6.—STATEMENT of Slide and Boom Dues from the St. Maurice Slides and Works, outstanding on June 30, 1892, and remaining uncollected on September 30, 1902.

Name.	Year to which Dues belong.	Amount.	Total.	Remarks.
		\$ cts.	\$ cts.	
George Baptist, Son & Co.	1878	469 95		
"	1879	2,110 62		
"	1880	1,696 18		
"	1881	293 69		
"	1882	165 80		
"	1884	118 50		
"	1888	4 28		
			4,859 02	
Ross, Ritchie & Co.	1878	3,072 84		
"	1883	2,173 68		
"	1884	28 96		
"	1886	1 62		
"	1887	4 38		
			5,281 48	
Alex. Baptist	1879		2,116 96	
Wm. Ritchie & Co	1888	779 24		
"	1889	332 11		
			1,111 35	
Ritchie Bros	1886	413 43		
"	1887	634 71		
			1,048 14	
G. B. Hall	1890		49 34	
T. E. Normand.....	1890		42 28	
Trefflé Biron	1891		0 92	
			14,481 49	

To make this balance agree with the Public Accounts, there should be deducted \$7.93 over credited Alex. Baptist, and \$217.17 added thereto, being \$190.40 paid July 23, 1884, and \$26.77 over charged in error to Wm. Little, not in any of the collector's returns, which will give balance due September 30, 1894, of \$14,690.73.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, September 30, 1902.

EDWARD T. SMITH,
Collector of Slide and Boom Dues.

SESSIONAL PAPER No. 19

No. 7.—STATEMENT of Slide and Boom Dues accrued from the Newcastle and Trent River Works, outstanding on June 30, 1902, and remaining uncollected on September 30, 1902.

Name.	Year to which Dues belong.	Amounts disputed.	Ordinary Dues.	Total.	Remarks.
		\$ cts.	\$ cts.	\$ cts.	
Irwin & Boyd	1881.....	59 79	59 79	} Insolvent.
Thomson & McArthur.	1880.....	52 78	.....	52 78
Jabez Thurston.	1882	12 50	.....	12 50
McDougall & Ludgate.	1879	65 07	.....	65 07
Bigelow & Trounce ...	1882 to 1885	216 21	.....	216 21
R. G. Strickland	1882, '83, '85, '86 and '87..	215 08	215 08	} Dead and estate distributed.
Est. late Geo. Hilliard.	1877 to 1883 and 1886....	354 15	.....	354 15
T. G. Hazlett	1881, '82, '84 to '89.....	885 25	885 25	} According to judgement in Exchequer Court, <i>re</i> Boyd <i>vs.</i> Smith, these cannot be collected.
J. M. Irwin	1882, '83, '85 to '88.....	698 45	.....	698 45
D. Ulliyott	1881 to 1887	547 68	.....	547 68
Green & Ellis.....	1881 to '83, '85, '88 and '89	157 01	.....	157 01
A. W. Parkin.....	1884, '85, '88, '90 and '91..	65 92	.....	65 92
The Dickson Estate. .	1883.....	137 50	137 50	} Sent to Dept. of Justice for collection.
Alfred McDonald.....	1888	40 80	.....	40 80
John Parkin.....	1889	13 00	.....	13 00
Gilmour & Co	1893, '94, '95, 1900.....	.....	4,412 64	4,412 64
John Dovey	1894, '95, '96	35 70	35 70	
		3,521 19	4,448 34	7,969 53	

EDWARD T. SMITH,
Collector of Slide and Boom Dues.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, September 30, 1902.

2-3 EDWARD VII., A. 1903

No. 8.—The Dry Dock at Esquimalt, B.C.

STATEMENT of Dues and other charges collected during the year ending June 30, 1902.

Name of Vessel Docked.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges.	Total.
		From	To			
		1901.	1901.	\$ cts.	\$ cts.	\$ cts.
SS. Guernsey.....	4,375	July 22.	July 25..	656 00	1 20	657 20
H.M.S. Amphion.....	4,300	Aug. 19.	Aug. 24..	255 04	.....	255 04
Ship Hawaiian Isles.....	2,097	" 30.	Sept. 2..	564 00	5 45	569 45
H.M.S. Virago and Sparrowhawk.....	{ 265	Sept. 13.	" 25..	518 17	.....	518 17
	265	" 16.	" 26..			
SS. Horda.....	2,934	Oct. 11.	Oct. 26..	1,786 00	49 20	1,835 20
SS. Crusader.....	4,227	" 27.	" 28..	400 00	2 40	402 40
H.M.S. Phaeton.....	4,300	{ " 7.	" 11..	577 70	.....	577 70
		" 29.	Nov. 8..			
Str. City of Topeka.....	1,057	Nov. 15.	Dec. 1..	1,092 50	21 60	1,114 10
Str. Dolphin.....	824	Dec. 1.	" 2..	300 00	5 40	305 40
Str. Farallon.....	565	" 7.	" 29..	927 00	3 00	930 00
		1902.	1902.			
Marine Railway Co.....		Jan. 3.	*	.....	4 50	4 50
H.M.S. Egeria.....	940	" 15 & 17.	Jan. 25..	343 27	.....	343 27
" Virago.....	265	Feb. 21.	Mar. 8..	.....	.....	.....
" Sparrowhawk.....	265	" 21.	" 8..	503 86	.....	503 86
" Egeria.....	940	Mar. 10.	" 28..	667 25	.....	667 25
Dominion Str. Quadra and scow.....	573	Apr. 8.	Apr. 12..	390 00	.....	390 00
SS. Roanoke.....	2,354	" 21.	" 23..	488 00	13 20	501 20
SS. Queen Mary..	3,461	" 24.	" 30..	980 00	2 40	982 40
H.M.S. Shearwater.....	980	May 1.	May 10..	430 25	.....	430 25
SS. Tampico.....	2,133	" 11.	" 14..	566 00	10 20	576 20
SS. Garonne.....	3,876	" 14.	" 16..	518 00	4 20	522 20
B.C. Stevedoring Co.....		†	.....	.....	3 00	3 00
SS. Victoria.....	{ 2,354	June 9.	June 25..	2,402 50	10 80	2,413 30
	.....	‡	.....	0 15	.....	0 15
	43,350			14,365 69	136 55	14,502 24

* Water supplied. † 5,000 galls. water at 60 cents per mill. ‡ Overcharge

EDWARD T. SMITH,
Collector of Public Works Revenue

DEPARTMENT OF PUBLIC WORKS,
Ottawa, September 30, 1902.

SESSIONAL PAPER No. 19

No. 9.—The Dry Dock at Lévis.

STATEMENT of Dues and other charges collected during the Year ended June 30, 1901.

Name of Vessel Docked.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges.	Total.
		From	To			
		1901.	1901.	\$ cts.	\$ cts.	\$ cts.
SS. Bogstad.....	3,058	July 1..	July 26..	2,979 00	21 00	3,000 00
H.M.S. Indefatigable.....			Entry fee.	200 00		200 00
".....	3,600	Sept. 19..	Oct. 3..	1,908 00	20 00	1,928 00
SS. Urania.....	2,460		Entry fee.	200 00		200 00
SS. Campana.....			"	200 00		200 00
SS. Urania.....		Oct. 17..	Nov. 8..	2,382 40	12 25	2,394 65
SS. Alf.....			Entry fee.	200 00		200 00
".....	3,065	Nov. 8..	Nov. 19..	1,424 30	3 25	1,427 55
		1902.	1902.			
SS. Minnetonka..			Entry fee.	200 00		200 00
SS. Campana, wintering.....	1,697			800 00		800 00
Govt. Dredge Laval, wintering.....	150			150 00		150 00
" No. 6 "	75.6			150 00		150 00
SS. Minnetonka.....	5,270	May 14..	June 25..	6,726 80	20 00	6,746 80
SS. Minnewaska.....			Entry fee.	200 00		200 00
SS. Sahara.....			"	200 00		200 00
	19,375.6			17,920 50	76 50	17,997 00

EDWARD T. SMITH,
Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS,
Ottawa, September 30, 1902.

No. 10—The Dry Dock at Kingston, Ont.

STATEMENT of Dues and other charges collected during the Year ending June 30, 1902.

Name of Vessel Docked.	Tonnage.	PERIOD OF DOCKAGE.		Dockage Charges.	Other Charges.	Total.
		From	To			
		1901.	1902.	\$ cts.	\$ cts.	\$ cts.
Str. Robina.....	332	July 12..	July 13..	66 40	.....	66 40
Yacht Nokomis	62	Aug. 14..	Aug. 16..	50 50	.....	50 50
Str. D. D. Calvin	750	" 26..	" 28..	188 00	5 00	193 00
Str. Saturn.....	883	Sept. 2..	Sept. 3..	169 21	.....	169 21
Str. New Island Wanderer..	123	" 23..	" 26..	74 60	.....	74 60
Str. Hecla,.....	1,110	Oct. 19..	Oct. 22 ..	277 55	.....	277 55
Under						
Str. Richelieu (wrecked).....	100	" 28..	" 30..	40 00	.....	40 00
Tug Bronson.....	137	Nov. 7..	Nov. 7..	27 40	5 00	32 40
SS. Rosemount.....	1,580	" 10..	" 12..	318 60	.....	318 60
Str. Resolute.	372	" 22 ..	Dec. 1..	282 72	.....	282 72
Tug D. G. Thomson.....	185	Dec. 2..	" 4..	67 50	.....	67 50
Str. D. D. Calvin.....	750	" 5..	" 7..	188 00	.....	188 00
Str. Parthia.....	198	" 9..	" 10..	50 10	.....	50 10
Str. Chieftain.....	435	" 11..	" 12..	87 00	.....	87 00
SS. Rosemount.....	.....	" 16..	Ent. fee.	100 00	.....	100 00
		1902.	1902.			
"	1,580	" 16..	Feb. 17..	540 50	.....	540 50
Tug Dauntless.	81	April 25..	April 29..	70 00	8 00	78 00
Govt. Dredge Dept.—						
Tug Delisle.....	45	.....	.....	.....	.....	.....
Dredge Nipissing.....	105	.....	.....	.....	.....	.....
Three Scows.....	180	April 1..	April 25..	573 15	80 00	653 15
Govt. Tug St. Paul.....	45	" 30..	May 2..	50 00	5 00	55 00
Bothnia {	833	} May 3..	" 5..	386 90	.....	386 90
Cargo	1,087					
Barge Kildonan.....	523	May 6..	" 7..	102 30	.....	102 30
Str. Glengarry.....	732	" 12..	" 13..	123 20	.....	123 20
Str. Corona	1,274	" 19..	" 22..	371 26	.....	371 26
Tug Geo. D. Seymour.....	76	" 23..	" 24..	20 00	.....	20 00
Str. Chippewa.....	1,514	" 26..	" 29..	476 85	5 00	481 85
St. Valeria.....	52	" 30..	" 31..	20 00	.....	20 00
Tug Jessie Hall.....	56	June 21..	June 21..	20 00	.....	20 00
15,200				4,741 74	108 00	4,849 74

EDWARD T. SMITH,
Collector of Public Works Revenue.

DEPARTMENT OF PUBLIC WORKS,
Ottawa, September 30, 1902

PART VII.

MISCELLANEOUS

ACTS OF PARLIAMENT, PASSED AT SESSION OF 1902, HAVING
REFERENCE TO THIS DEPARTMENT.

CONTRACTS LET BY THE DEPARTMENT.

PROPERTY PURCHASED OR SOLD.

PROPERTY LEASED TO OR BY THE DEPARTMENT.

CURATOR'S REPORT, NATIONAL ART GALLERY.

NAMES OF CHIEF OFFICERS OF THE DEPARTMENT.

NAMES OF OFFICIALS EMPLOYED ON SLIDES AND BOOMS.

NAMES OF PERSONS EMPLOYED ON GRAVING DOCKS.

NAMES OF ENGINEERS, FIREMEN AND CARETAKERS OF
PUBLIC BUILDINGS.

AND THE OFFICIAL CORRESPONDENCE OF THE DEPARTMENT

FOR THE

FISCAL YEAR ENDED JUNE 30, 1902



DEPARTMENT OF PUBLIC WORKS,
OTTAWA, October 25, 1902.

SIR,—I beg leave to transmit herewith the following statements concerning the transactions of the Department, during the last fiscal year with respect to contracts and property, and which are required for insertion in the annual report, 1901-02, viz. :—

No. 1.—Statement of contracts let by this department during the fiscal year ended June 30, last.

No. 2.—Statement of property purchased and sold by this department during the same period.

No. 3.—Statement of property leased to and by the said department during the same period ; and

No. 4.—A list of some of the Public Acts of the Parliament of Canada, passed at the last Session, and having reference to the Department.

I have the honour to be, Sir,
Your obedient servant,

J. A. CHASSÉ,
Law Clerk.

FRED. GÉLINAS, Esq.,
Secretary of the Department of Public Works,
Canada.

LIST

OF SOME OF THE

ACTS OF PARLIAMENT

PASSED AT THE SESSION OF 1902

HAVING REFERENCE TO THE

DEPARTMENT OF PUBLIC WORKS OR WORKS UNDER ITS CHARGE

LIST of some of the Public Acts of the Parliament of Canada passed at the Second Session, Ninth Parliament, closed by Prorogation on May 15, 1902, and having reference to the Public Works Department or works under its charge (2 Edward VII).

Subject.	Full Title of the Statute.	Chapter.	Page in Statute Book.
Sums granted to His Majesty for the financial years ending June 30, 1902, and June 30, 1903, and the purposes for which they are granted.	An Act for granting to His Majesty certain sums of money for the public service of the financial years ending respectively June 30, 1902, and June 30, 1903	1	3
Respecting the Civil Service.	An Act to amend the Civil Service Retirement Act, 1898.	6	69
Respecting the Evidence Act.	An Act further to amend the Canada Evidence Act, 1893.	9	75

N.B.—Trent and Newcastle District.—Regulations for the use, management and maintenance of the slides and booms in the Trent and Newcastle District were established by an Order in Council passed on the 20th day of June, 1901.

Upper Ottawa Improvement Company, Limited.—A schedule of tolls to be levied by said company for the use of their works during the season of 1902 was approved by an Order in Council passed on the 8th of February, 1902.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, Oct. 25, 1902.

J. A. CHASSÉ,
Law Clerk.



STATEMENTS

SHOWING

1ST.--CONTRACTS LET BY THE DEPARTMENT OF PUBLIC WORKS OF CANADA, FROM JUNE 30, 1901 TO JUNE 30, 1902.

2ND.--PROPERTY PURCHASED OR SOLD BY THE DEPARTMENT OF PUBLIC WORKS DURING THE FISCAL YEAR ENDED JUNE 30, 1902.

3RD.--PROPERTY LEASED TO AND BY THE DEPARTMENT OF PUBLIC WORKS DURING THE FISCAL YEAR ENDED JUNE 30, 1902.

2-3 EDWARD VII., A. 1903

No. 1.—CONTRACTS let by the Department of Public Works of Canada, from June 30, 1901, to June 30, 1902.

Works.	Names of Contractors.	Date of Contract.		Amount.
PUBLIC BUILDINGS.				\$ cts.
Nova Scotia.				
Arichat—Construction of a public building	Edward Doyle	May	31, 1902	4,400 00
Baddeck—Construction of armoury	Joseph Green	Aug.	8, 1901	2,250 00
" armoury, sundry work	P. H. McFarlane	May	30, 1902	1,500 00
Digby public building, fittings	James Reid	Nov.	16, 1901	1,800 00
" " heating apparatus	Frank Powers	Dec.	3, 1901	825 00
Guysborough—Construction of a post office building	Edward F. Munro	April	14, 1902	13,951 00
Halifax—Construction of a custom-house, &c., building	M. E. Keefe	"	16, 1902	250,000 00
Kentville public building, asphalt sidewalks	Wm. McFatridge	July	23, 1901	350 00
Middleton—Construction of an armoury	Allen & Son & Neily	June	3, 1902	4,675 00
Point Edward—Sydney quarantine station, excavating for w.c., &c.	R. Shean & Co.	Oct.	19, 1901	672 00
Springhill public building, plumbing work	C. A. Lusby & Co.	June	4, 1902	1,125 00
" post office heating apparatus	Frank Powers	March	18, 1902	1,141 00
Prince Edward Island.				
Summerside public building, repairs	Clark & McLeod	Oct	25, 1901	708 25
New Brunswick.				
Marysville—Construction of a post office building	C. J. B. Simmons	Feb.	10, 1902	6,862 00
St. John—Construction of immigration building	James H. Pullen	July	2, 1901	20,685 00
" Partridge Island, quarantine station, heating apparatus	P. Campbell & Co.	Oct.	26, 1901	2,973 00
" immigration building, heating apparatus	R. E. Fitzgerald	March	3, 1902	1,800 00
Sussex—Construction of armoury	Wallace Bros	July	9, 1901	4,537 97
" armoury, heating apparatus	H. H. Dryden	Feb.	21, 1902	992 00
Woodstock public building, retaining wall	J. S. Leighton, jr.	Sept.	13, 1901	2,280 00
" " sundry works	A. W. Fields	Oct.	17, 1901	450 00
Quebec.				
Buckingham public building, heating apparatus	L. J. Fauteux	Aug.	16, 1901	1,087 00
" " installation of electric light	J. T. Croisetière	Oct.	29, 1901	Per out- let. 2 00
Drummondville public building, heating apparatus	Albert Beauchesne	Jan.	21, 1902	1,000 00
" " fixtures	Paquet & Godbout	Feb.	15, 1902	1,200 00
" " installation of electric light	A. Gagnon	May	1, 1902	305 00
Grosse Isle quarantine station, plumbing works	O. Picard & fils	Aug.	19, 1901	383 00
" " engine, dynamo, switchboard, &c.	Ahearn & Soper, Ltd.	Oct.	14, 1901	11,868 00
Granby—Construction of public building	Dussault & Pageau	Nov.	2, 1901	14,987 00
Hochelaga post office, heating apparatus	Alex. Mackey & Co.	Aug.	17, 1901	850 00
" " tower clock	J. B. A. Guindon	Jan.	18, 1902	475 00
" " fittings	O. Martineau & fils	March	3, 1902	3,000 00
" " sundry works to complete	"	Feb.	5, 1902	1,152 00
Hull post office, tower clock	J. B. A. Guindon	Jan.	18, 1902	2,000 00
Montreal examining warehouse, masonry work	Théo. Leclaire	May	28, 1902	5,362 25
" " carpentry works	Z. Beauchamp	"	28, 1902	4,375 00
" " iron works	H. R. Ives & Co	"	28, 1902	1,700 00
" " plumbing works	A. Rousseau	"	28, 1902	925 00
" " painting	J. Bte. Pauzé & Co.	"	28, 1902	2,831 00
" " concrete and roof	Théo. Leclaire	"	28, 1902	1,200 00
" " plastering	S. Gosselin	"	28, 1902	205 00
" " tile flooring	Forsyth Granite & Marble Co.	"	28, 1902	700 00

2-3 EDWARD VII., A. 1903

No. 1.—CONTRACTS let by the Department of Public Works, &c.—Continued.

Works.	Names of Contractors.	Date of Contract.	Amount.
PUBLIC BUILDINGS—Continued.			\$ cts.
Quebec—Concluded.			
Montreal post office, caretakers's quarters, heating apparatus.....	R. Rousseau.....	Feb. 6, 1902	453 00
Quebec cartridge factory, freight elevator.....	A. Laurent.....	Oct. 9, 1901	890 00
" post office, fittings.....	Ed. Côté.....	" 23, 1901	1,345 00
" construction of an iron foundry.....	Dussault & Pageau. . .	June 24, 1902	17,347 95
" construction of an artillery workshop. . .	Wm. Stuart... ..	May 27, 1902	26,981 00
Roberval—Construction of a stable (Imm. bldg)..	J. B. Carbonneau.....	Nov. 20, 1901	400 00
St. Jérôme public building, repairs.....	F. Fillion.....	Aug. 27, 1901	1,775 00
Sherbrooke exam. warehouse, heating apparatus..	E. Boucher & Son.....	Oct. 7, 1901	800 00
Three Rivers post office, alterations.....	N. Guillemette & fils....	" 22, 1901	165 00
Ontario.			
Brockville drill hall, heating apparatus.....	David L. Booth.....	Oct. 25, 1901	1,556 00
" " filling in and levelling ground.....	".....	" 26, 1901	1,200 00
" " electric lighting.....	A. G. Dobbie & Co . . .	Nov. 26, 1901	820 00
Dundas armouries, heating apparatus.....	Adam Clark.....	" 15, 1901	894 00
Kingston military college hospital, heating apparatus.....	Martel & Langelier.....	April 17, 1902	600 00
" " construction of a gymnasium ..	Sullivan & Langdon.....	June 24, 1902	35,956 00
Ottawa public buildings, supply of ice.....	J. O. Charlebois	April 22, 1902	Per 100 lbs. 0 20
" post office, illumination, royal visit.	Ahearn & Soper, Ltd....	Sept. 12, 1901	5,710 00
" Langevin Block, two boilers.....	H. R. Ives & Co.....	Oct. 3, 1901	770 00
" House of Commons, electric pass. elevator	Fensom Elevator Works. .	" 12, 1901	4,500 00
" Senate, electric passenger elevator.....	".....	" 12, 1901	4,500 00
" military store, heating apparatus.....	Martel & Langelier.....	" 22, 1901	2,950 00
" " fittings.....	Geo. Chs. Hurdman.....	Nov. 4, 1901	12,460 00
" Major's Hill Park, construction of a conservatory.....	W. C. Edwards Co., Ltd. .	" 5, 1901	3,750 00
" " erection of a greenhouse.....	".....	" 5, 1901	3,000 00
" Seybold building, erection of elevator ..	G. H. Fensom	Aug. 1, 1901	1,500 00
" military store, electric freight elevator...	Fensom Elevator Works. .	April 7, 1902	4,000 00
Paris public building, heating apparatus.....	Martel & Langelier....	Oct. 10, 1901	1,200 00
" " fittings.....	Wm. Griffith.	Jan. 8, 1902	3,000 00
Picton " plumbing work and alterations.....	Robert Cameron.....	Aug. 22, 1901	1,000 00
Ontario.			
Picton public building, fittings.....	Robert Cameron.....	Oct. 24, 1901	2,695 00
Prescott " water and sewerage works.....	Chas. Baker	" 15, 1901	2,377 00
St. Thomas armouries, heating apparatus.....	Pierre Leclerc Fils	Apr. 18, 1902	1,741 00
" " electric wiring and fixtures.....	Jas. Achesons.....	June 19, 1902	475 00
Strathroy public building, painting, &c.....	Geo. McBeth.. ..	Oct. 2, 1901	934 00
" " striking clock for tower.....	H. C. Brittain & R. Dickinson.	Aug. 12, 1901	2,000 00
Toronto—Construction of Postal station 'C'.....	Brown & Love.....	May 21, 1902	23,925 00
Windsor public building, sundry works....	Euc. Jacques.....	Sept. 16, 1901	3,050 00
" drill hall, heating apparatus.....	Martel & Langelier.....	Oct. 17, 1901	1,490 00
" " fittings.....	John Pigott & Sons.....	" 26, 1901	2,300 00
" " installation of elect. materials.....	The People's Elec. Co... .	Dec. 13, 1901	750 00
" public building, sundry works.. ..	W. C. Donaldson.....	Nov. 27, 1901	1,143 00
Woodstock " fittings for post office and ex. warehouse.....	J. A. Desrivières....	Aug. 15, 1901	4,900 00
Manitoba.			
Winnipeg—Construction of an immigration hospital.....	Geo. A. Mitchell & Co... .	June 2, 1902	10,887 00

2-3 EDWARD VII., A. 1903

No. 1.—CONTRACTS let by the Department of Public Works, &c.—Continued.

Works.	Names of Contractors.	Date of Contract.		Amount.
PUBLIC BUILDINGS— <i>Concluded.</i>				\$ cts.
<i>North-west Territories.</i>				
Carnduff, Assa.—Construction of court house, out-buildings, &c.....	T. M. Harrington & Co..	Feb.	11, 1902	5,238 41
Lethbridge—Construction of immigration building	Brown Pipes.....	Aug.	27, 1902	2,820 00
Regina Land's Office, installation of electric lighting	Regina E. L. & P. Co...	Dec.	14, 1901	210 00
Saskatoon—Construction of immigration building	James Leslie.....	Oct.	22, 1901	3,300 00
<i>British Columbia.</i>				
Kamloops public building, heating apparatus.....	Leek & Co	July	11, 1901	1,711 00
" " fittings.....	R. MacKay.....	Dec.	11, 1901	2,563 00
" Dominion Lands' Office, fittings.....	"	Jan.	9, 1902	796 00
" Construction of a drill shed.....	D. H. Campbell.....	Apr.	29, 1901	5,750 00
Kaslo " "	D. J. McLachlan.....	Mar.	15, 1902	4,200 00
Nelson public building—Construction of side entrance.....	Viau & Lemoine.....	Oct.	19, 1901	796 00
Nelson public building, erection of vaults.....	"	Dec.	4, 1901	2,000 00
" " construction of a drill shed	Wm. Geo. Gillett.....	Apr.	29, 1902	6,500 00
New Westminster pub. building, heating apparatus	Jos. Lamarche.....	Oct.	18, 1901	2,700 00
" " fittings.....	Jos. Bourque.....	"	30, 1901	5,000 00
Revelstoke—Construction of a drill shed.....	John Kernaghan.....	June	18, 1902	7,631 00
Rossland post office, heating apparatus.....	W. E. Vanstone	Jan.	2, 1902	1,940 00
Vancouver drill hall, fittings.....	Viau & Lachauce.	Nov.	6, 1902	4,400 00
" " heating apparatus.. ..	"	Aug.	19, 1901	4,000 00
HARBOURS AND RIVERS.				
<i>Nova Scotia.</i>				
Iona—Construction of a wharf	Hugh McDonald.....	Oct.	29, 1901	784 00
Parker's Cove—Extension of breakwater.....	W. H. Anderson.....	June	25, 1902	9,985 00
<i>Prince Edward Island.</i>				
Souris, stone protection seaward slope of break-water	James Lanigan.....	Mar.	31, 1902	Per c. yds. 3 74
<i>New Brunswick.</i>				
Caraquet—Construction of a public wharf at. . .	Simmons & Burpee.....	Mar.	1, 1902	59,990 60
Cole's Point—Construction of wharf.....	J. B. McManus.....	Jan.	27, 1902	27,007 00
Grande Anse—Extension of breakwater.....	Jos. W. Dumas.....	Aug.	3, 1901	10,900 00
Richibucto —Protection of and extension to break-water.....	Viau & Lachance.....	Feb.	25, 1902	22,900 00
<i>Quebec.</i>				
Des Joachims—Stone pier and abutments.....	Chas. Lemoine.....	July	10, 1901	8,950 00
" Iron superstructure of highway bridge.....	Dominion Bridge Co., Ltd	"	13, 1901	9,967 50
Father Point, Rimouski—Construction of pier....	Heney & Smith.....	Nov.	8, 1901	57,821 00
Hull-Ottawa Interprovincial Bridge—Illumination during visit Royal Highnesses.....	Ahearn & Soper.....	Aug.	27, 1901	5,000 00
Hull—Freight shed on wharf.....	Jos. Bourque	Mar.	24, 1902	3,200 00
Isle aux Coudres—Extension of pier.....	Mag. Francœur.	Nov.	9, 1901	6,967 00
Maria, Bonaventure—Construction of isolated block	John Burns & J. W. Loughran.....	May	31, 1902	24,700 00
Ruisseau, LeBlanc—Construction of breakwater..	John Burns.....	Mar.	21, 1902	21,770 00
St. Laurent, Isle d'Orleans—Addition to wharf...	Dussault & Lemieux....	June	2, 1902	16,598 00
St. Nicholas—Reconstruction of part of wharf....	"	Dec.	2, 1901	7,475 00
Three Rivers—Construction of a dock, ice-breaker and dredging.....	Randolph Macdonald....	June	10, 1902	280,500 00

SESSIONAL PAPER No. 19

No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Concluded.*

Works.	Names of Contractors.	Date of Contract.	Amount.
HARBOURS AND RIVERS—<i>Concluded.</i>			
<i>Ontario.</i>			
Bayfield—Extension of south pier.....	James Clark.....	Nov. 27, 1901	6,440 00
Depot Harbour—Rip-rap foundation and additional length to elevator wharf	Davis, Haney & Miller.	May 14, 1902	195,000 00
Hamilton, Burlington Channel—Renewal superstructure, western end of south pier, and sheet piling on channel side.....	James Clark.....	Oct. 10, 1901	96,700 00
Port Colborne—Extension of breakwater and rock excavation.....	Hogan & Macdonell.....	June 23, 1902	100,000 00
<i>North-west Territories.</i>			
Battle River—Superstructure of steel highway bridge	Dominion Bridge Co....	Aug. 10, 1901	21,600 00
VESSELS, DREDGES AND PLANT.			
Construction of a three-quarter dipper dredge for Arrow Lakes Channels, B.C.	The Polson Iron Works..	June 28, 1902	15,000 00
Construction of a two furnace marine return tubular boiler.....	The Laurie Engine Co....	Feb. 7, 1902	1,900 00
Construction of two cylindrical marine boilers for hopper dredge.....	" " ..	Apr. 11, 1902	17,000 00
Construction of two twin screw propelling engines and centrifugal pumps	The Polson Iron Works..	" 26, 1902	23,000 00
TELEGRAPH.			
Construction of a telegraph line, Clayoquot to Alberni, B.C.....	M. J. Conlin.....	Apr. 19, 1902	7,000 00

J. A. CHASSÉ,
Law Clerk.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, October 25, 1902.

SESSIONAL PAPER No. 19

No. 2. STATEMENT of properties purchased or sold by the Department of Public Works during the Fiscal Year ended June 30, 1902.

Date of Conveyances.	Vendors.	Purchasers.	Description of Property.	For what purpose.	Area.	Price.
1901.						\$
July 31	A. M. Nanton & J. H. Munson.	His Majesty	Lot 20, block 4, Red Deer, N.W.T.	Public building.		75 00
Sept. 13	Marie Comte et vir	"	Strip of land part of lot 440, N. side Langevin St., Hull, P.Q.	Post office.	10 x 113 ft	200 00
Dec. 17	Frs. A. Potter et al	"	Lot No. 291 and Premises, Clinton, Ont	Public building	20 perches	2,500 00
" 18	The Small & Fisher Co., Ltd.	"	Lot of land with buildings thereon, corner Elm and Green Sts., Woodstock, N.B.	Armoury		1,200 00
Oct. 4	Robert Phinney	"	Lot and premises, Water St., Richibucto, N.B.		2 acres	808 00
Nov. 21	D. Fraser	"	Part of lot 4, south side, Dundas St., London, Ont.	Drill shed	5,115 sq. ft	3,000 00
Dec. 4	H. E. Crouch	"	Part of lot 5 and right of way, Waterloo St., London, Ont.	"	3,022 "	5,000 00
" 14	M. D. Pride et al.	"	Lot of land, Springhill, N.S.	Public building.	75 x 80 ft	2,400 00
" 23	V. Racette	"	Lot 165, S. W. corner Notre Dame and Jacques Sts., L'Assomption, P.Q.	"	90 x 66 ft	1,150 00
" 30	Mrs. M. Muir	"	Dwelling house in dock yard, Esquimalt, B.C.	Dock purposes		1,200 09
1902.						
Jan. 20	Helena J. Durkin	"	Part of lot 5, S. side Dundas St., London, Ont	Drill shed	11,532 sq. ft	3,300 00
" 30	B. Caravella et al	"	" 4 "	"	3,380 sq. ft.	3,000 00
Feb. 18	His Majesty	The Sincennes-McNaughton Line, Ltd.	Tug <i>Minnie F. Parsons</i>	Private enterprise		500 00
" 18	"	"	Tug <i>St. James</i>	"		575 00
Mar. 7	Henry Plummer	His Majesty	Lot No. 6, sub-division lot No. 1, Sault Ste. Marie, Ont.	Public building.		700 00
" 7	W. H. Plummer	"	Lots Nos. 2, 3, 4, 5, N. side, Queen St., Sault Ste. Marie, Ont	"		8,900 00
" 13	Val. Eaton et al	"	Land in Granville Centre, N.S.	Approach to wharf	$\frac{92}{100}$ of an acre.	250 00
" 24	C. P. Ry. Co. & Manitoba & Southwestern Colonization Co.	"	Piece of land, corner Pacific Ave. and Connell St., Carnduff N.W.T.	Public building.	200 x 260 ft	440 00
Apl. 17	Land Security Co.	"	Portion of ordinance reserve, block D, Toronto, Ont.	Site for p. office, w. end		6,000 00
" 25	Frs. Lemoine	"	Dredge, 2 scows, 1 steam tug.	For dredging		9,000 00
May 3	Kenneth L. Morrison et al.	"	Strip of land between public road and Great Bras d'Or Channel, Boularderie Centre, N.S.	For approach to wharf.	91,740 sq. ft.	100 00
June 4	Kenneth McDonald	"	Part of river lot 20, Edmonton, N.W.T.	Site for jail	124 acres	9,309 00
" 4	D. McDougall	"	Part river lot 20, Edmonton, N.W.T.	"	29 acres	1,450 00
" 9	Corp. of Trafalgar, Ont.	"	Parcel of land, Village of Bronte, Ont	Harbour improvements	7 acres	1 00
" 9	"	"	99 shares in Harbour Company of Bronte	"		1 00
" 28	Neil P. MacLean et al	"	Strip of land, Washabuck Centre, N.S.	Approach to wharf.	5,330 sq. ft	20 00

SESSIONAL PAPER No. 19

No. 3.—STATEMENT of properties leased to and by the Department of Public Works during the Fiscal Year ended June 30, 1902.

Date of Lease.	Lessors.	Lessees.	Property Leased.	For what purpose.	Duration of Lease.	Annual Rental.
1901.						
Sept. 1.....	C. P. Ry. Co.	His Majesty..	Part of ground floor of new addition to Windsor St., Montreal.	Post office.....	1 year.....	\$1,300.
Nov. 1	R. N. Slater <i>et al.</i>	"	Premises in rear of No. 172 Wellington St., Ottawa..	For N. W. M. Police	5 years.....	\$50 per month.
1902.						
Feb. 17.....	Chs. E. Pearson ..	"	1st flat Imperial building, Ottawa	Agriculture ..	5 ..	\$1,800 per annum.
Mar. 14.....	John Merrian	"	Lower floor of new building at Red Deer, N.W.T....	Immig. purposes.....	2 ..	\$30 per month.
" 31.....	His Majesty	Wm. Pedwell.....	Water lot, Brooke, Ont	Mill purposes.	10 ..	\$5 per annum.
April 8.....	"	Jacob D. Speers	" ..	" ..	10 ..	\$5 ..

J. A. CHASSÉ,
Law Clerk.

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, October 25, 1902.

NATIONAL ART GALLERY

CURATOR'S REPORT

FOR THE FISCAL YEAR ENDED JUNE 30, 1902

NATIONAL ART GALLERY.

CHIEF ARCHITECT'S OFFICE,

OTTAWA, November 24, 1902.

SIR,—I have the honour to report that the following additions have been made to the National Art Gallery of Canada, during the fiscal year ending June 30, 1902.

“Harvest Scene” by F. S. Challoner, Esq., R.C.A., presented by the Royal Canadian Academy.

“The Studio” by C. Kreighoff, purchased by the Government for the sum of seven hundred dollars, \$700.

Eight thousand nine hundred and fifteen visitors registered during the year, being a decrease from the previous year of some eight thousand, this decrease in a measure was due to the fact that the Gallery was closed while undergoing cleaning, painting, papering, etc.

I have the honour to be, sir,

Your obedient servant,

L. FENNINGS TAYLOR,

Curator, National Art Gallery.

FRED. GELINAS, Esq.,

Secretary, Department of Public Works.

NAMES OF THE CHIEF OFFICERS
OF THE
DEPARTMENT OF PUBLIC WORKS
WITH
DATES OF APPOINTMENT, ETC., FROM 1841 TO 1902

NAMES OF THE CHIEF OFFICERS.

The names with the dates of the appointment, &c., of the principal Officials of the Department of Public Works, from 1841 to 1902.

Names.	Capacity or Office.	Date of Appointment.			
		Served From	To		
<i>Under Statute 4-5 Vic., Cap. 38.</i>					
CORPORATION BOARD OF WORKS.					
Killaly, Hon. H. H.....	Chairman.....				
Daly, Hon. D.....	Members.....	Dec.	29, 1841		
Harrison, S. B.....				Oct.	3, 1844
Sullivan, R. B.....					
Davidson, J., Esq.....					
Begly, Thomas A.....	Aug.	17, 1841			
Keefer, Samuel.....	Chief Engineer.....	"	17, 1841		
Rubidge, F. B.....	Architect and Assistant Chief Engineer.....	Dec.	15, 1841		
NEW BOARD OF WORKS.					
Killaly, Hon. H. H.....	Chairman.....				
Daly, Hon. D.....	Members.....	Oct.	4, 1844		
Draper, Hon. W. H.....				June	8, 1846
Morris, Hon. W.....					
Papineau, Hon. D. B.....					
<i>Under Statute 9th Vic., Cap. 37, &c.</i>					
Robinson, Hon. W. B.....	Chief Commissioner.....	June	22, 1846		
Taché, Hon. E. P.....	".....	March	11, 1848		
Chabot, Hon. J.....	".....	Dec.	13, 1849		
Merritt, Hon. W. H.....	".....	April	8, 1850		
Bourret, Hon. J.....	".....	Feb.	12, 1851		
Young, Hon. John.....	".....	Oct.	28, 1851		
Chabot, Hon. J.....	".....	Sept.	23, 1852		
Lemieux, Hon. F.....	".....	Jan.	27, 1855		
Alleyn, Hon. C.....	".....	Nov.	26, 1857		
Holton, Hon. L. H.....	".....	Aug.	2, 1858		
Sicotte, Hon. L. V.....	".....	"	7, 1858		
Rose, Hon. John.....	".....	Jan.	11, 1859		
Cauchon, Hon. Jos.....	Commissioner.....	June	13, 1861		
Tessier, Hon. U. J.....	".....	May	24, 1862		
Drummond, Hon. L. T.....	".....	"	28, 1863		
Laframboise, Hon. M.....	".....	July	24, 1863		
Chapais, J. C.....	".....	March	30, 1864		
Casgrain, Hon. Chas. Eus.....	Second Commissioner.....	July	9, 1846		
Cameron, Hon. M.....	Assistant Commissioner.....	March	11, 1848		
Wettenhall, James, Esq.....	".....	Feb.	2, 1850		
Bourret, Hon. Jos.....	".....	April	17, 1850		
Killaly, Hon. H. H.....	".....	Feb.	12, 1851		
Keefer, Samuel.....	Deputy Commissioner.....	May	6, 1859		
Trudeau, Toussaint.....	".....	March	8, 1864		
Begley, Thos. A.....	Secretary.....	Feb.	10, 1841		
Trudeau, Toussaint.....	".....	Dec.	13, 1859		
Braun, Frederiek.....	".....	March	8, 1864		
Page, John.....	Chief Engineer.....	Oct.	31, 1873		

2-3 EDWARD VII., A. 1903

The names with the dates of the appointment, &c., of the principal Officials of the Department of Public Works, from 1841 to 1902---Continued.

Names.	Capacity or Office.	Date of Appointment.			
		Served		To	From
Under Statute 31 Vic., Chap. 12.					
McDougall, Hon. Wm.....	Minister..	July	1, 1867	Dec.	7, 1869
Langevin, C.B., Hon. Hector L.....	"	Dec.	8, 1869	Nov.	6, 1873
Mackenzie, Hon. Alexander	"	Nov.	7, 1873	Oct.	16, 1878
Tupper, C.B., K.C.M.G., Sir Charles....	"	Oct.	17, 1878	May	19, 1879
Langevin, C.B., K.C.M.G., Sir Hector L.	"	May	20, 1879	Aug.	11, 1891
Smith, Hon. Frank.....	Acting Minister.....	Aug,	14, 1891	Jan.	10, 1892
Ouimet, Hon. Joseph Aldric... ..	Minister.....	Jan.	11, 1892	April	30, 1896
Desjardins, Hon. Alphonse	"	May	1, 1896	July	12, 1896
Tarte, Hon. J. Israël.	"	July	13, 1896		
Trudeau, Toussaint.....	Deputy Minister.....	May	29, 1868	Oct.	1, 1879
Baillairgé, G. F.....	"	Oct.	4, 1879	Dec.	31, 1890
Gobeil, A.....	"	Jan.	1, 1891		
Braun, Frederick.	Secretary.....	July	1, 1867	Sept.	30, 1879
Chapleau, S.....	"	Oct.	1, 1879	Nov.	4, 1880
Ennis, F. H.....	"	Nov.	5, 1880	Jan.	13, 1885
Gobeil, A.....	"	Jan.	23, 1885	Dec.	31, 1890
Roy, E. F. E	"	"	1, 1891	"	31, 1900
Gelinas, Fred.....	"	June	8, 1901		
McPherson, D. A.....	Assistant Secretary.....	Jan.	18, 1891	April	11, 1893
Desrochers, Rodolphe Charles.	"	"	8, 1896		
Page, John	Chief Engineer.....	July	1, 1868	Oct.	1, 1879
Perley, H. F.....	"	Nov.	25, 1880	July	10, 1891
Coste, Louis.....	"	July	26, 1892	March	18, 1899
Lafleur, E. D.....	Acting Chief Engineer	March	18, 1899		
Scott, Thos S.....	Chief Architect.....	May	26, 1871	Oct.	30, 1881
Fuller, Thomas.....	"	Oct.	31, 1881	June	30, 1897
Ewart, David ..	"	Nov.	2, 1897		

NAMES
OF THE
OFFICIALS EMPLOYED ON THE SLIDES AND BOOMS OF CANADA
ON JUNE 30, 1902
WITH
DATES OF APPOINTMENT, SALARIES, ETC.

OFFICIALS EMPLOYED ON THE SLIDES AND BOOMS.

STATEMENT showing the Names, Dates of Appointment, Salaries, &c., of persons employed on the various Slides and Booms, on June 30, 1902.

Name.	Date of Birth.	Position.	Where employed.	Date of Appointment.	Salary.	Remarks.
<i>Collector of Slide and Boom Ducs.</i>					\$ cts.	
E. T. Smith	Nov. 26, 1846.	Collector.	Ottawa.	July 1, 1889.	1,800 00 a year.	Date of first appointment to Crown timber office, Ottawa, June 23, 1864. Clerk in Dept. of Inland Rev., July 1, 1870, to June 30, 1889. Transferred to civil list with rank of first class clerk, January 5, 1892.
F. N. Gagné	Sept. 23, 1859.	Clerk	"	Dec. 16, 1897.	1,003 75 "	Entered the service Aug. 13, 1889.
James Steen.	June 17, 1830.	Boatman.	"	July 12, 1889.	60 00 a month.	Employed during the season of navigation, for 8 months each year. Date of first appointment, May 26, 1861. Timber counter, Ottawa, for Dept. of Inland Revenue, Jan. 7, 1884, to June 30, 1889.
J. Brassard. . . . .	. . . . .	" . . . . .	" . . . . .	March 1, 1901.	60 00 "	Employed during the season of navigation, for 8 months each year.
<i>Saguenay District.</i>	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	Saguenay district slides abandoned by authority of O.C., dated Feb. 5, 1896 (No. 168,740).
<i>St. Maurice District.</i>	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
L. P. Dallaire. . . . .	. . . . .	Paymaster.	Three Rivers.	May 1, 1898.	66 66 a month.	
Cyriac Lymburner. . . . .	. . . . . 1833.	Boom master.	Grand'Mère.	April 25, 1881.	75 00 "	
Jos. Page.	July 7, 1845.	"	M'th of St. Maurice.	Dec. 10, 1879.	75 00 "	
Jos. Dick. . . . .	. . . . .	Asst. boom master.	Cap aux Corneilles.	May 19, 1898.	75 00 "	
Gédéon Rousseau. . . . .	. . . . .	" . . . . .	Shawenigan & Grès.	April 7, 1896.	75 00 "	
Moïse Masson. . . . .	. . . . .	Boom master.	Grandes Piles.	May 19, 1898.	75 00 "	
<i>Ottawa District.</i>	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
G. P. Brophy.	Feb. 24, 1846.	Superintendent.	Ottawa.	July 6, 1873.	2,500 00 a year.	<i>Ottawa River Works</i> —In addition to the above officers, &c., there are employed
D. Scott.	" 15, 1830.	Accountant.	"	Oct. 1, 1854.	1,500 00 "	

SESSIONAL PAPER No. 19

J. C. Scott.....	June 27, 1865.....	Measurer.....	"	"	April 1, 1889....	3 50 a day.....	during the running season, one foreman on slide at \$1.50 and one assistant foreman at \$1.25 a day; also 25 to 30 labourers at \$1 to \$1.40 a working day.
J. Kent.....	Jan. 28, 1864.....	Clerk.....	"	"	Aug. 1, 1886....	3 25 ".....	Actively employed about 7 months. Oversees repairs in winter.
Wm. Cain.....	April 22, 1860.....	Messenger.....	"	"	Jan. 1, 1892....	1 35 ".....	"
Pierre St. Pierre.....	.....	Deputy slide master.....	Carillon.....	"	June 1, 1897....	1 40 ".....	Employed about 6 months.
D. Noonan.....	June 17, 1840.....	Boom master.....	Gatineau.....	"	Mar. 21, 1878....	500 00 a year.....	Oversees repairs in winter.
J. Soulière.....	Nov. 8, 1829.....	Deputy slide master.....	Chaudière.....	"	....., 1878....	2 50 a day.....	"
P. D. Chene.....	.....	"	Hull.....	"	June 14, 1899....	1 50 ".....	Actively employed about 7 months.
W. A. Sheriff.....	.....	"	Chats.....	"	April 26, 1898....	1 50 ".....	Employed about 3 months during season of navigation.
John Harvey.....	May 22, 1831.....	Slide master.....	Arnprior.....	"	July 12, 1882....	2 50 ".....	Employed 5 months during season of navigation. Oversees repairs in winter.
Joseph McCrea.....	Mar. 26, 1869.....	Boom master.....	Springtown.....	"	May 15, 1880....	300 00 a year.....	"
Patrick Barry.....	" 27, 1858.....	Slide master.....	High Falls.....	"	Mar. 10, 1888....	1 50 a day.....	"
Duncan McLaren.....	Jan. 7, 1860.....	Deputy slide master.....	Portage du Fort.....	"	Sept. 7, 1881....	456 25 a year.....	"
D. Rochon.....	.....	"	Black River.....	"	.....	480 00 ".....	"
Wm. Selkirk.....	.....	"	Lower Petewawa.....	"	.....	2 00 a day.....	"
P. O'Connor.....	.....	"	Upper Petewawa.....	"	Mar. 18, 1898....	2 00 ".....	"
Wm. Thompson.....	May 3, 1843.....	"	Mountain.....	"	Oct. 10, 1879....	1 25 ".....	" 6 mos,
S. Moorhead.....	.....	"	Calumet.....	"	Mar. 1, 1901....	30 00 a month.....	" 6 to 7 mos.
John Mullin.....	.....	"	Coulouge.....	"	April 10, 1890....	360 00 a year.....	" 4 mos.
H. R. Downey.....	May 16, 1846.....	"	Des Joachims.....	"	July 1, 1889....	360 00 ".....	" " " "
J. F. McGuire.....	.....	"	Dumoine.....	"	May 1, 1897....	2 00 a day.....	Employed 3 months during season of navigation. Will inspect works when required.
J. J. French.....	.....	"	Crooked Chute.....	"	.....	2 00 ".....	"
A. H. Johnson.....	Nov. 28, 1839.....	"	Chenaux.....	"	....., 1865....	2 50 ".....	Paid during season of navigation, 7 mos.
G. T. Johnson.....	Sept. 10, 1841.....	"	"	"	....., 1872....	1 75 ".....	Attends to repairs in winter.
<i>Newcastle District.</i>							
S. Clegg.....	.....	Superintendent.....	Peterborough.....	"	Mar. 1, 1901....	1,600 00 a year.....	Receives \$400 a year from Department of Railways and Canals.
G. H. Giroux.....	.....	Clerk, Supt's office.....	"	"	1, 1880....	400 00 ".....	\$250 a year as lock master, Dept. R. & C.
W. T. Junkin.....	.....	Slide master.....	Fenelon Fall.....	"	Nov. 15, 1896....	100 00 ".....	Receives \$150 a year from Department of Railways and Canals.
R. T. Hill.....	.....	"	Buckhorn.....	"	July 1, 1891....	100 00 ".....	"
Hamilton Johnston.....	.....	"	Heeley's Falls.....	"	15, 1892....	200 00 ".....	Receives \$240 a year from Department of Railways and Canals.
John Dinwoodie.....	.....	"	Lakefield.....	"	June 20, 1893....	150 00 ".....	"
C. Choquette.....	.....	Boom master.....	Belœil Station.....	"	July 26, 1897....	100 00 ".....	"

Richelieu District.

STATEMENT showing Names, &c., of the persons employed on the various Slides and Booms—*Concluded.*

Name.	Date of Birth.	Position.	Where employed.	Date of Appointment.	Salary.	Remarks.
<i>Burlington Channel Swing Bridge.</i>					\$ cts.	
Wm. Omand.....	Bridge attendant.....	Burlington.....	Sept. 19, 1896....	600 00 "	.....
R. Fletcher.....	" assistant.....	"	July 1, 1899....	1 25 a day.....	Employed 9 months.
C. Rasberry	"	"	Sept. 19, 1896....	1 25 "	"
Jas. Eustice	"	"	" 19, 1896....	1 25 "	"
<i>Yamaska District.</i>						
H. Lambert	Lock keeper	Yamaska.	July 1, 1897....	40 00 a month...	
O. Mineau	"	"	Sept. 1, 1885....	40 00 "	
<i>Rivière du Lièvre.</i>						
Hugh R. Gorman.	Lock master	Rivière du Lièvre. .	April 15, 1897....	40 00 "	
Charles Brazeau,	Labourer.....	"	Mar. 3, 1902....	35 00 "	

NAMES
OF
PERSONS EMPLOYED ON THE VARIOUS GRAVING DOCKS
ON JUNE 30, 1902
WITH
DATES OF APPOINTMENT, SALARIES ETC.

GRAVING DOCK EMPLOYEES.

STATEMENT showing the Names, Dates of Appointments, Salaries, &c., of Persons employed on the various Graving Docks, June 30, 1902.

Name.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
<i>Esquimalt Graving Dock, British Columbia.</i>					
John Devereux	Dockmaster.....	Esquimalt.....	Sept. 17, 1887.....	\$ 166 66 a month.....	
John Jeffcott.....	Engineer.....	"	Jan. 4, 1901.....	100 00 "	
F. N. Jones.....	Assistant engineer.....	"	" 8, 1901.....	80 00 "	
A. D. Greeves	Carpenter.....	"	Dec. 1, 1887.....	80 00 "	
W. Young	Stoker... ..	"	"	50 00 "	
T. Collins.....	"	"	"	60 00 "	
Chas. Jordan.....	"	"	"	60 00 "	
G. Springer.....	Watchman.....	"	"	50 00 "	
John Stock.....	Labourer... ..	"	July 1, 1894.....	50 00 "	
<i>Lévis Graving Dock.</i>					
Alf. Samson.....	Dockmaster.....	Lévis	Feb. 15, 1900.....	1,000 00 a year.....	
Wm. Macdougall.....	Mechanical engineer ..	"	June 1, 1888.....	75 00 a month.....	
T. Després.....	Asst. mechanical engineer...	"	July 21, 1901.....	45 00 "	
Narcisse Lemelin.....	Fireman.....	"	June 1, 1888.....	40 00 "	
<i>Kingston Graving Dock.</i>					
F. S. Rees.....	Dockmaster...	Kingston.....	April 1, 1897.....	1,000 00 a year.. ..	
Robert McLeod.....	1st engineer.....	"	July 1, 1892.....	75 00 a month . . .	
Wm. Geoghegan.....	Fireman.....	"	" 1, 1892	45 00 "	
C. Staley.....	Watchman.....	"	" 1, 1892.....	45 00 "	

JOS. VINCENT.

LIST
OF
ENGINEERS, ENGINEMEN, FIREMEN AND CARETAKERS
EMPLOYED IN THE
PUBLIC BUILDINGS THROUGHOUT THE DOMINION ON JUNE 30, 1902
DATES OF APPOINTMENT, SALARIES, ETC.

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ENGINEERS AND CARETAKERS, PUBLIC BUILDINGS.

STATEMENT showing the Names, &c., of the Engineers, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings on June 30, 1902.

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time employed each Year.	Yearly Salary.
Amherst.....	Post office	J. H. Chapman	Jan. 1, 1846	Caretaker.....	Sept. 1, 1900	\$ 33 33	12 months..	\$ 400 00
Antigonish	Public building.....	Angus McDonald.....	Mar. —, 1820	"	Feb. 5, 1891	33 33	12 "	400 00
Annapolis.....	Post office and custom house.	John McKay.....	Oct. 26, 1847	"	April 1, 1891	33 33	12 "	400 00
Baddeck.....	Public building.	D. F. McKenzie.....	May 20, 1848	"	Jan. 21, 1899	20 83	12 "	250 00
Dartmouth	"	I. C. Henley.....	Dec. 11, 1846	"	May 22, 1894	20 83	12 "	250 00
Digby	"	F. Dennison.....	Nov. 8, 1841	"	Mar. 14, 1902	33 33	12 "	400 00
Halifax	Dominion building	Richard Power.....	Aug. 5, 1834	Engineer	Oct. 1, 1871	62 50	12 "	750 00
"	"	John Powell.....	" 21, 1836	Fireman.....	" 1, 1871	50 00	8 "	400 00
"	"	J. F. Sullivan	April 16, 1866	Caretaker.....	July 1, 1892	33 33	12 "	400 00
"	"	W. H. Gray.....	Nov. 26, 1848	Watchman	Sept. 10, 1891	39 00	12 "	468 00
"	Drill hall	John Crowell.....	Feb. 26, 1852	Fireman....	Dec. 13, 1901	50 00	12 "	600 00
"	Examining warehouse.....	M. O'Neil.....	Dec. 30, 1850	Caretaker.	Oct. 1, 1897	33 33	12 "	400 00
"	Immigrant building	John Oxley.....	April 17, 1856	Fireman	Feb. 2, 1897	50 00	12 "	600 00
Kentville.....	Public building.....	W. Hiltz.....	" 4, 1864	Caretaker.....	Nov. 14, 1900	33 33	12 "	400 00
Liverpool.....	"	James Clements	June 5, 1835	"	June 20, 1900	33 33	12 "	400 00
Lunenburg	"	J. E. Hebb	Nov. 3, 1833	"	" 7, 1895	25 00	12 "	300 00
New Glasgow.	Post office.....	J. A. Mutch.....	Dec. 12, 1840	"	Oct. 3, 1901	25 00	12 "	300 00
North Sydney.	Public building.....	Alex. Green.....	July 16, 1825	"	" 1, 1897	33 33	12 "	400 00
Pictou.....	Post office and custom house.	Jas. Arbuckle	Feb. 18, 1836	"	Dec. 20, 1896	33 33	12 "	400 00
Springhill.....	Post office.....	S. McDowell	June 16, 1826	"	Feb. 11, 1902	33 33	12 "	400 00
Sydney South.....	Post office and custom house.	L. Keefe.....	May 5, 1846	"	Nov. 1, 1897	33 33	12 "	400 00
Truro	"	Alex. P. Smith	" 17, 1837	"	April 1, 1897	29 16	12 "	350 00
Windsor	Post office.....	J. A. Mosher.....	Nov. 16, 1841	"	Feb. 13, 1899	33 33	12 "	400 00
Yarmouth	Public building.....	W. H. Whallen.....	Dec. 23, 1841	"	Mar. 1, 1900	33 33	12 "	400 00
Charlottetown.....	Dominion building	Wm. J. Fraser.....	Jan. 1, 1836	" & fireman	April 3, 1844	33 33	12 "	400 00
"	"	Geo. Walker	Aug. 28, 1826	Messenger.....	Jan. 19, 1875	41 67	12 "	500 00
"	"	M. A. Allan.....	Jan. 8, 1855	"	" 24, 1898	41 67	12 "	500 00
Montague.....	Public building	Angus McKenzie.....	Mar. 12, 1856	Watchman	Nov. 1, 1896	45 00	12 "	540 00
Summerside	Dominion building	W. Gillis.....	Oct. —, 1831	Caretaker.....	May 9, 1898	13 33	12 "	160 00
Bathurst.....	Post office.....	A. MacSween	Sept. 25, 1835	"	Sept. 1, 1897	33 33	12 "	400 00
Chatham	"	J. A. Melançon.....	Jan. 20, 1825	"	April 13, 1887	33 33	12 "	400 00
Carleton, St. John..	"	C. Johnston.....	May 18, 1856	"	Mar. 27, 1895	25 00	12 "	300 00
Dalhousie.....	"	James R. Reid	Aug. 15, 1823	"	Oct. 1, 1889	8 33	12 "	100 00
"	"	Wm. Gould	Jan. 1, 1853	"	Nov. 26, 1890	33 33	12 "	400 00

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Fredericton.....	"	L. Yerva.....	Dec.	18, 1843	Caretaker	July	1, 1900	33 33	12	"	..	400 00
Moncton.....	"	E. B. Hicks.....	Jan.	11, 1882	"	Jan.	11, 1886	33 33	12	"	..	400 00
Newcastle.....	"	Patrick Keating.....	Mar.	13, 1840	"	Oct.	23, 1886	33 33	12	"	..	400 00
St. John.....	"	Neil J. Morrison.....	July	25, 1858	Eng. & caretaker	April	27, 1894	60 00	12	"	..	720 00
"	"	Christopher White.....	Nov.	20, 1844	Fireman	Nov.	9, 1885	50 00	12	"	..	600 00
"	"	James A. Paul	Aug.	1, 1837	Caretaker.....	Oct.	13, 1891	41 67	12	"	..	500 00
"	"	James Wolfe	Mar.	10, 1850	Engineer	Dec.	1, 1893	55 00	12	"	..	660 00
"	"	Edward Haney.....	Feb.	22, 1849	Hoist attendant.	Nov.	27, 1882	50 00	12	"	..	600 00
St. Stephen.....	"	Samuel Topping	April	2, 1839	Caretaker.....	May	25, 1887	33 33	12	"	..	400 00
Sussex.....	"	Mrs. N. Dryden.....	June	21, 1840	"	Mar.	26, 1901	16 66	12	"	..	200 00
Woodstock.....	"	Charles Trafton.....	Jan.	20, 1839	"	May	1, 1897	33 33	12	"	..	400 00
Aylmer	P.Q.	Miss M. G. Woods	May	16, 1860	"	April	29, 1895	5 00	12	"	..	60 00
Berthierville.....	"	J. Ralston.....	Nov.	16, 1839	"	Nov.	15, 1899	33 33	12 months	..	..	400 00
Coaticook.....	"	Israel Baldwin.....	Nov.	16, 1839	"	June	27, 1889	33 33	12	"	..	100 00
Drummondville....	"	A. Paré.....	April	27, 1842	"	"	20, 1902	8 33	12	"	..	300 00
Fraserville.....	"	Z. Raymond.....	Nov.	—, 1831	"	Nov.	2, 1897	25 00	12	"	..	200 00
Hochelaga.....	"	J. H. Brown.....	Oct.	7, 1851	"	Mar.	27, 1902	16 66	12	"	..	150 00
Hull.....	"	J. I. Madore	Dec.	1, 1843	"	"	8, 1900	12 50	12	"	..	400 00
Joliette	"	A. Ratel	"	29, 1845	"	Sept.	1, 1897	33 33	12	"	..	100 00
Lachine	"	P. O. Robert.....	Sept.	7, 1846	"	Jan.	26, 1899	8 33	12	"	..	50 00
Laprairie	"	Jos. Brisson	Nov.	11, 1869	"	Nov.	22, 1901	4 16	12	"	..	1,200 00
Montreal	"	Thomas Ryan	June	18, 1836	Foreman engin'r	Mar.	4, 1882	100 00	12	"	..	500 00
"	"	Ed. Lanctot	April	14, 1837	Caretaker.....	Dec.	3, 1898	41 67	12	"	..	600 00
"	"	M. Boyer	Feb.	18, 1848	Fireman	Mar.	4, 1882	50 00	12	"	..	360 00
"	"	Jos. Loiseau.....	Jan.	4, 1869	"	Nov.	15, 1901	45 00	8	"	..	720 00
"	"	F. Green.....	Oct.	4, 1837	Engineer	Jan.	1, 1885	60 00	12	"	..	900 00
"	"	L. D. Thibault	Jan.	28, 1861	Electrician.....	June	1, 1885	75 00	12	"	..	720 00
"	"	G. S. Gingras	Dec.	13, 1867	" &c.....	Jan.	7, 1895	60 00	12	"	..	600 00
"	"	Oscar Renaud	Feb.	19, 1862	Elevator man...	Sept.	10, 1898	50 00	12	"	..	600 00
"	"	Art. Forget	July	25, 1867	"	Dec.	15, 1893	50 00	12	"	..	660 00
"	"	S. N. Nickle.....	Dec.	25, 1871	"	Mar.	1, 1894	55 00	12	"	..	600 00
"	"	L. Brault.....	"	29, 1854	"	Sept.	1, 1901	50 00	12	"	..	547 50
"	"	C. Vadebonceur.....	May	17, 1842	Caretaker w. c ..	Feb.	6, 1864	1.50 p.d.	12	"	..	730 00
"	"	J. Dulrisac	Feb.	2, 1863	Messenger.....	Dec.	15, 1893	2.00 p.d.	12	"	..	600 00
Inland revenue....	"	Louis St. Jean.....	Sept.	17, 1840	Fireman.....	"	1, 1892	50 00	12	"	..	540 00
Custom house	"	H. Marchand.....	"	6, 1849	"	"	2, 1882	45 00	12	"	..	350 00
"	"	C. Daudelin.....	June	19, 1843	"	July	16, 1892	29 16	12	"	..	600 00
Custom house and ex. wareh.	"	B. Lajeunesse	Nov.	20, 1861	"	Nov.	23, 1896	50 00	12	"	..	540 00
Drill hall and armour's.	"	J. Gagnier	April	4, 1867	Engineman.....	Feb.	14, 1899	45 00	12	"	..	360 00
"	"	A. James.....	Nov.	29, 1872	Fireman	Jan.	1, 1900	45 00	8	"	..	900 00
Examining warehouse....	"	D. P. Kennedy	Feb.	9, 1865	Engineer	April	1, 1897	75 00	12	"	..	640 00
"	"	T. P. McLaughlin	Aug.	25, 1871	Fireman.....	Aug.	26, 1892	53 33	12	"	..	540 00
Cullers office.....	"	James O'Neil.....	"	15, 1861	"	"	1, 1894	45 00	12	"	..	540 00
Custom house	"	John R. Mountain.....	Nov.	1, 1848	"	Nov.	10, 1888	45 00	12	"	..	700 00
Post office.....	"	J. Roy.....	Feb.	25, 1836	Caretaker.....	Sept.	1, 1897	58 33	12	"	..	660 00
"	"	F. J. Cooper.....	July	8, 1858	Fireman.....	June	25, 1895	55 00	12	"	..	300 00
"	"	J. B. Carbonneau.....	Aug.	12, 1864	Caretaker.....	Nov.	20, 1901	25 00	12	"	..	150 00
"	"	A. Lepage.....	July	14, 1869	"	Jan.	1, 1901	12 50	12	"	..	250 00
"	"	H. Demarais	"	14, 1869	"	May	1, 1898	20 83	12	"	..	400 00
"	"	O. Desève.....	Aug.	6, 1848	"	April	2, 1898	33 33	12	"	..	400 00

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STATEMENT showing the Names, &c., of the Engineers, Firemen, Caretakers, Hoist Attendants and Watchmen employed at the Dominion Public Buildings, &c.—Continued.

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time employed each Year.	Yearly Salary.
						\$ cts.		\$ cts.
Sorel	P.Q.	C. Robitaille	Jan. 22, 1848	Caretaker.....	Sept. 1, 1897	33 33	12 "	400 00
St. Henri.....	"	A. C. A. Bissonnette....	May 25, 1858	"	Mar. 4, 1895	.....	.....	.....
St. Hyacinthe....	Public building.	F. X. Tétrault.....	Nov. 8, 1846	Fireman.....	Aug. 5, 1893	33 33	12 months	400 00
St. Johns.....	Post office.....	L. Farrant.....	Jan. 21, 1849	Caretaker.....	April 11, 1897	29 16	12 "	350 00
St. Jérôme.....	Public building	J. Savard	Oct. 24, 1859	"	Sept. 1, 1900	33 33	12 "	400 00
Three Rivers ..	Custom house....	Ph. Gravelle	Oct. 3, 1828	"	Feb. 1, 1891	25 00	12 "	300 00
"	Post office.....	A. Gauthier.....	Feb. 4, 1850	"	"	33 33	12 "	400 00
Victoriaville....	Public building.	Miss Eva Beaudet	July 28, 1867	"	May 15, 1901	6 25	12 "	75 00
Amherstburg	Post office.....	R. Elliott.....	Aug. 22, 1835	"	"	33 33	12 "	400 00
Almonte.....	"	Wm. Moulton.....	March 23, 1839	"	Jan. 29, 1891	33 33	12 "	400 00
Arnprior	Public building	R. B. McReary.....	Jan. 11, 1862	"	Mar. 15, 1899	33 33	12 "	400 00
Brockville	Post office.....	H. Purvis.....	Sept. 12, 1826	"	Dec. 15, 1900	33 33	12 "	400 00
Brantford.....	"	John Squire.....	April 24, 1842	"	Oct. 27, 1880	50 00	12 "	600 00
Barrie.....	"	R. D. Hill.....	Nov. 1, 1857	"	June 26, 1896	33 33	12 "	400 00
Belleville.....	"	S. Haight.....	May 8, 1857	"	Jan. 24, 1900	50 00	12 "	600 00
Berlin	"	J. Clemens.....	June 21, 1840	"	May 15, 1900	33 33	12 "	400 00
Brampton	"	James McBride.....	Oct. 5, 1840	"	Jan. 29, 1891	33 33	12 "	400 00
Carleton Place....	"	Jas. F. Halfpenny.....	April 17, 1858	"	May 13, 1892	25 00	12 "	300 00
Chatham	"	W. W. Mitchell.....	May 25, 1848	" &c.....	Jan. 7, 1885	33 33	12 "	400 00
Cornwall.....	"	R. Conroy.....	Nov. 6, 1848	"	April 1, 1897	33 33	12 "	400 00
Cayuga.....	"	G. A. Gibson.....	May 29, 1861	"	Sept. 3, 1891	4 16	12 "	50 00
Cobourg.....	"	John Boyd.....	Dec. 9, 1836	"	Aug. 1, 1901	33 33	12 "	400 00
Dundas.....	"	Wm. Graham.....	" 5, 1853	"	July 1, 1898	4 16	12 "	50 00
Galt.....	"	Wm. Kilgour.....	March 3, 1857	"	Sept. 23, 1886	33 33	12 "	400 00
Guelph.....	"	R. McLeod.....	July 30, 1865	"	May 25, 1901	33 33	12 "	400 00
Gananoque.....	"	T. P. Richardson.....	Feb. 25, 1834	" .....	" .....	.....	.....	.....
Goderich	" &c	G. Bisset.....	April 14, 1851	"	Sept. 1, 1897	33 33	12 "	400 00
Hamilton.....	Dominion building.	Alfred Barnard.....	Dec. 27, 1847	"	Dec. 10, 1894	50 00	12 "	600 00
"	"	J. Wigglesworth.....	Aug. 7, 1863	Fireman.....	Oct. 1, 1896	50 00	8 "	400 00
"	"	Thomas Nicholson.....	Dec. 17, 1857	Engineer.....	Mar. 2, 1887	50 00	12 "	600 00
Ingersoll.....	Public building.....	John McDonald.....	June 30, 1841	Caretaker.....	Nov. 20, 1900	33 33	12 "	400 00
Kingston.....	R. Military College.	Wm. F. Hazlett.....	May 27, 1854	Engineer.....	"	65 00	12 "	780 00
"	"	M. Madden	Dec. 22, 1838	Fireman.....	Oct. 12, 1878	55 00	12 "	660 00
"	"	M. Redmond	Oct. 2, 1867	"	Jan. 29, 1902	45 00	12 "	540 00
London.....	Custom house.....	M. Mulkern	Sept. 4, 1837	Engineman.....	Sept. 18, 1888	50 00	12 "	600 00
"	Post office.....	Wm. Greer.....	Oct. 12, 1839	Caretaker.....	Mar. 16, 1884	33 33	12 "	400 00

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London.....	Ont.	Post office.	John Price.....	Oct.	1836	Engineer..	Jan.	14, 1884	50 00	12 12	600 00
Lindsay.....	"	" and O. house.....	Wm. Galbraith.	Jan.	6, 1844	Caretaker, . .	Nov.	16, 1893	33 33	12 12	400 00
Napanee.....	"	"	Mrs. C. E. Webster.....	July	12, 1846	"	Oct.	4, 1901	33 33	12 12	400 00
Niagara Falls.....	"	"	Wm. J. Shepard.....	Jan.	4, 1854	"	Jan.	15, 1897	33 33	12 12	400 00
Orangeville.....	"	"	D. McPherson.....	April 30,	1851	"	July	15, 1900	33 33	12 12	400 00
Orillia.....	"	"	John Frawley.....	March 14,	1844	"	Nov.	1, 1898	25 00	12 12	300 00
Peterborough.....	"	"	John Irwin.....	May 17,	1842	"	June	8, 1887	25 00	12 12	300 00
"	"	Custom house.	Wm. Taylor.....	Nov. 25,	1839	"	Jan.	26, 1889	25 00	12 12	300 00
Petrollea.....	"	Post office	Chas. McRitchie.....	March 29,	1853	"	Feb.	1, 1894	33 33	12 12	400 00
Port Colborne.....	"	"	Wm. Armstrong.....	Sept. 9,	1846	"	June	11, 1888	20 00	12 12	240 00
Port Hope.....	"	"	Levi Raynolds.....	Feb. 15,	1839	"	Nov.	17, 1885	33 33	12 12	400 00
Port Arthur.....	"	Public building..	John Whitehead.....	April 15,	1839	"	Sept.	11, 1893	25 00	12 12	300 00
Pembroke	"	"	Samuel, Hamilton.	June 4,	1834	"	Oct.	29, 1890	33 33	12 12	400 00
Prescott	"	Post office.....	R. Birks.....	April 6,	1822	"	May	1, 1899	33 33	12 12	400 00
Rat Portage. . . .	"	Public building.....	Mrs. J. Link.....	May 10,	1850	"	Dec.	7, 1901	33 33	12 12	400 00
Stratford.....	"	Post office, &c.....	J. P. Murray.....	July 29,	1855	Engineer.....	Jan.	26, 1900	50 00	12 12	600 00
St. Catharines.....	"	"	Louis Reno.....	Oct. 24,	1842	Caretaker.....	Feb.	27, 1897	33 33	12 12	400 00
St. Thomas.....	"	"	James Russell.....	Sept. 15,	1832	"	Sept.	4, 1885	33 33	12 12	400 00
Strathroy.....	"	Public building.....	Wm. J. Johnson.....	May 12,	1840	"	Oct.	25, 1890	33 33	12 12	400 00
Smith's Falls.....	"	"	R. W. Lewis.....	Aug. 19,	1863	"	Jan.	8, 1896	25 00	12 12	300 00
Toronto.....	"	Dominion buildings.....	H. C. Hamilton.....	April 14,	1838	Forem., engineer	April	10, 1902	100 00	12 12	1,200 00
"	"	Inland revenue building.....	C. H. Baillie.....	Sept. 22,	1852	Fireman.....	Jan.	13, 1891	55 00	12 12	660 00
"	"	Custom house.....	Fred. Faragher.....	Oct. 16,	1865	"	Nov.	1, 1899	55 00	12 12	660 00
"	"	"	Ed. Switzer.....	"	10, 1856	Hoist attendant.	Aug.	18, 1901	55 00	12 12	660 00
"	"	Examining warehouse.....	James Cosgrove.....	Feb. 10,	1844	Engineer.....	Dec.	28, 1874	70 00	12 12	840 00
"	"	"	Ed. Appleton.....	Sept. 26,	1864	Fireman....	Sept.	23, 1886	55 00	12 12	660 00
"	"	"	Alexander Dey.....	"	27, 1863	Hoist attendant.	Dec.	1, 1887	50 00	12 12	600 00
"	"	"	Win. Chenery.....	Dec. 19,	1851	"	"	1, 1887	50 00	12 12	600 00
"	"	"	M. Baland.....	Sept. 29,	1847	"	Oct.	24, 1902	50 00	12 12	600 00
"	"	"	Thos. Jones.....	Nov. 10,	1853	Watchman	April	4, 1902	46 50	12 12	558 00
"	"	Union station.	J. Gornaly.....	Nov. 26,	1872	Hoist attendant.	Oct.	17, 1901	50 00	12 12	600 00
"	"	Post office.....	J. Somers.....	April 8,	1835	Engineer.. . .	"	9, 1897	45 00	8 8	360 00
"	"	"	George Letray.....	May 20,	1858	Fireman.. . .	Nov.	1, 1896	50 00	8 8	400 00
"	"	"	G. Philips.....	Oct. 11,	1856	"	Oct.	1, 1898	45 00	8 8	360 00
"	"	Drill hall.....	Richard Fyre.....	"	11, 1849	"	Mar.	25, 1895	50 00	12 12	600 00
"	"	"	D. Glionna.....	Aug. 8,	1867	"	Oct.	1, 1898	50 00	8 8	400 00
"	"	Examining warehouse.....	M. W. Devane.....	"	28, 1867	Watchman	June	1, 1900	50 00	12 12	600 00
Trenton.....	"	Public building.....	David Allen.....	May 13,	1844	Caretaker.....	Aug.	31, 1899	33 33	12 12	400 00
Windsor.....	"	Post office...	I. Belleperdie.....	Oct. 26,	1848	Engineman	Dec.	24, 1897	50 00	8 8	400 00
"	"	"	W. Curtis.....	March 6,	1844	Caretaker.....	Nov.	9, 1880	33 33	12 12	400 00
Walkerton.....	"	Public building.	T. Gibson.....	Aug. 14,	1838	"	"	1, 1897	33 33	12 12	400 00
Woodstock.....	"	"	Robert Kerr.....	June 6,	1864	"	Dec.	11, 1901	33 33	12 12	400 00
Brandon.....	Man.	"	T. Giles.....	March 30,	1843	"	Aug.	1, 1897	50 00	12 12	600 00
Portage la Prairie..	"	"	E. McNeil.....	April 29,	1833	"	Oct.	13, 1898	33 33	12 12	400 00
Winnipeg.....	"	Post office.....	J. D. McDougall..	May 1,	1843	Engineman	Jan.	21, 1900	75 00	12 12	900 00
"	"	"	John Mikulezky ..	"	6, 1879	Fireman.....	Nov.	13, 1900	45 00	12 12	540 00
"	"	"	Joseph Coutu.....	"	10, 1843	Hoist attendant.	Mar.	16, 1887	45 00	12 12	540 00
"	"	"	Joseph Gagnier.....	April 11,	1853	Watchman.	June	7, 1892	45 00	12 12	540 00
"	"	Custom house.....	J. R. Russell.....	Oct. 15,	1857	Fireman.....	Dec.	12, 1900	45 00	12 12	540 00
Calgary.....	N, W, T	Public building.....	G. L. Fraser.....	"	20, 1851	Caretaker.....	Aug.	1, 1894	40 00	12 12	480 00

STATEMENT showing the Names, &c., of the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at the Dominion Public Buildings, &c.—Concluded.

Place.	Building.	Name.	Date of Birth.	Position.	Date of Appointment.	Monthly Salary.	Time employed each year.	Yearly Salary.
						\$ cts.		\$ cts.
Calgary.....	N.W.T. Court-house.....	E. N. Brown.....	March 8, 1845	Caretaker.....	Jan. 24, 1891	45 00	12 months..	540 00
Edmonton.....	Land and registry office.....	R. Wylie.....	July 7, 1859	"	June 21, 1894	33 33	"	400 00
Lethbridge.....	Court house & C.-house.....	E. J. Hodder.....	Aug. 4, 1854	"	Mar. 1, 1901	35 00	"	420 00
Moosomin.....	"	J. C. Jopp.....	Jan. 6, 1848	"	April 29, 1897	50 00	"	600 00
Moosejaw.....	"	R. Smale.....	July 21, 1865	"	Nov. 21, 1898	33 33	"	400 00
Macleod.....	"	John Ryan.....	June 24, 1827	"	" 1, 1893	14 58	"	175 00
Medicine Hat.....	"	J. H. G. Bray.....	Jan. 24, 1841	"	June 1, 1900	45 00	"	540 00
Prince Albert.....	Land and registry office.....	George Cassie.....	Jan. 13, 1833	"	Aug. 25, 1893	33 33	"	400 00
Regina.....	Court house & C.-house.....	P. McAra.....	March 24, 1840	"	" 1, 1889	45 00	"	540 00
"	" &c.....	Jas. Machlan.....	Dec. 9, 1840	Fireman..	Oct. 3, 1898	40 00	" 8	320 00
"	Land office.....	W. J. Gore.....	July 22, 1863	Caretaker.....	May 6, 1901	45 00	" 12	540 00
Wolseley.....	Court House.....	W. Hare.....	Dec. 2, 1857	"	March 1, 1901	45 00	" 12	540 00
Atlin.....	Public building.....	J. A. Fraser.....	"	"	June 26, 1901	12 00	" 12	144 00
Kamloops.....	Post office.....	W. Saul.....	Dec. 15, 1837	"	April 1, 1902	50 00	" 12	600 00
Nanaimo.....	"	J. Thompson.....	Sept. 2, 1836	"	May 1, 1897	50 00	" 12	600 00
New Westminster..	"	Jno. McMurphy.....	Dec. 21, 1870	"	Jan. 18, 1901	50 00	" 12	600 00
Vancouver.....	Public building.....	Atwell King.....	April 6, 1843	"	Aug. 25, 1898	50 00	" 12	600 00
"	"	P. Powers.....	March 21, 1836	Watchman.....	Feb. 10, 1901	50 00	" 12	600 00
Victoria.....	New Dominion building.....	Wm. McKay.....	Dec. 31, 1857	Caretaker.....	" 4, 1898	50 00	" 12	600 00
"	Dominion building.....	A. Johnson.....	May 12, 1858	Asst. caretaker.	April 1, 1899	45 00	" 12	540 00
"	"	J. D. Milne.....	Oct. 12, 1840	Fireman.....	Oct. 4, 1898	45 00	" 8	360 00
"	"	J. McMillan.....	July 8, 1876	Elevatorman....	Nov. 27, 1898	60 00	" 12	720 00
"	Dominion building.....	Geo. Noot.....	Aug. 9, 1845	"	" 13, 1900	45 00	" 12	540 00
"	Old Custom House.....	Geo. Lyoll.....	Feb. 12, 1843	Caretaker.....	May 8, 1900	50 00	" 12	600 00

JOS. VINCENT.

OFFICIAL CORRESPONDENCE

DEPARTMENT OF PUBLIC WORKS

FROM

JULY 1, 1867, TO JUNE 30, 1902

OFFICIAL CORRESPONDENCE.

LETTERS Received and Sent from July 1, 1867, to June 30, 1902.

Year.				Received.	Sent.
1867—	From July 1 to December 31			2,075	1,511
1868	" January 1 to December 31.....			3,498	2,317
1869	" " "			3,448	2,171
1870	" " "			4,961	3,185
1871	" " "			6,268	3,983
1872	" " "			8,333	4,428
1873	" " "			10,072	5,707
1874	" " "			9,800	5,043
1875	" " "			9,006	5,006
1876	" " "			7,971	4,773
1877	" " "			7,517	4,425
1878	" " "			6,886	4,021
1879	" " to October 6.....			7,186	4,547
1879	" October 7 to December 31.....			2,033	810
1880	" January 1 "			8,451	4,410
1881	" " "			9,599	5,529
1882	" " "			10,505	5,699
1883	" " "			11,633	6,227
1884	" " "			13,114	6,903
1885	" " "			8,977	5,321
1886	" " "			9,644	5,352
1887	" " to June 30.....			4,866	2,735
1887	" July 1 " 1888			10,493	6,343
1888	" " " 1889.....			10,522	7,042
1889	" " " 1890.....			10,098	7,448
1890	" " " 1891.....			10,576	7,286
1891	" " " 1892.....			11,637	6,700
1892	" " " 1893			11,720	6,220
1893	" " " 1894.....			9,517	6,028
1894	" " " 1895.....			10,190	5,148
1895	" " " 1896.....			10,223	5,573
1896	" " " 1897.....			11,404	5,033
1897	" " " 1898.....			9,640	5,250
1898	" " " 1899.....			9,639	4,784
1899	" " " 1900			12,139	5,938
1900	" " " 1901.....			13,179	6,255
1901	" " " 1902.....			15,880	5,067

SESSIONAL PAPER No. 19

LETTERS Received and Sent, Chief Architect's Office, from January 1, 1880, to June 30, 1902.

Year.					Received.	Sent.
1880—From January 1 to June 30						1,273
1880	"	July 1	"	1881		2,943
1881	"	"	"	1882		2,859
1882	"	"	"	1883	3,538	4,600
1883	"	"	"	1884	3,860	6,004
1884	"	"	"	1885	4,500	6,718
1885	"	"	"	1886	6,075	6,450
1886	"	"	"	1887	6,816	6,380
1887	"	"	"	1888	6,947	6,870
1888	"	"	"	1889	6,484	7,667
1889	"	"	"	1890	7,448	6,578
1890	"	"	"	1891		7,751
1891	"	"	"	1892	6,113	4,260
1892	"	"	"	1893	7,428	6,453
1893	"	"	"	1894	6,900	4,517
1894	"	"	"	1895	7,538	5,327
1895	"	"	"	1896	7,843	5,783
1896	"	"	"	1897	10,700	8,200
1897	"	"	"	1898	10,867	8,547
1898	"	"	"	1899	10,913	8,762
1899	"	"	"	1900	12,386	9,878
1900	"	"	"	1901	12,287	9,860
1901	"	"	"	1902	12,560	10,330

2-3 EDWARD VII., A. 1903

LETTERS Sent from Chief Engineer's Office, from January, 1880, to June 30, 1902.

Year.					No.
1880.....	From January 10 to June 30.....				418
1880.....	"	July 1	"	1881.....	1,795
1881.....	"	"	"	1882.....	2,352
1882.....	"	"	"	1883.....	2,651
1883.....	"	"	"	1884.....	3,611
1884.....	"	"	"	1885.....	3,119
1885.....	"	"	"	1886.....	2,867
1886.....	"	"	"	1887.....	3,281
1887.....	"	"	"	1888.....	3,552
1888.....	"	"	"	1889.....	4,229
1889.....	"	"	"	1890.....	3,374
1890.....	"	"	"	1891.....	3,948
1891.....	"	"	"	1892.....	4,009
1892.....	"	"	"	1893.....	4,232
1893.....	"	"	"	1894.....	3,966
1894.....	"	"	"	1895.....	4,603
1895.....	"	"	"	1896.....	4,239
1896.....	"	"	"	1897.....	4,994
1897.....	"	"	"	1898.....	4,696
1898.....	"	"	"	1899.....	5,277
1899.....	"	"	"	1900.....	7,366
1900.....	"	"	"	1901.....	4,341
1901.....	"	"	"	1902.....	6,759

NOTE.—The letters, including returns, received in the Chief Engineer's Office may be estimated at the rate of two received to one sent.

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